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Original Articles.

A NEW PREPARATION FOR PYELOGRAPHY.

By Edward L. Young, Jr., M.D., Boston.

Genito-Urinary Surgeon to Out-Patients, Massachusetts General Hospital.

The various substances used to inject the kidney for the purpose of obtaining an x-ray outline of the pelvis are, and so far as I know, always have been, with a few exceptions, some soluble organic silver preparation. Some form of bismuth, lime water, and oxygen have all been tried, but without success. Ever since the beginning of this procedure, it has been obvious that there is danger of irritation to a greater or less degree, and as time goes on, more cases are reported where there has been a very severe reaction. This varies from the milder cases, with renal colic of one or two days' duration with local tenderness and some general prostration, to the cases with most severe local symptoms, where the kidney has to be decapsulated to save its integrity, and even a few cases resulting in the death of the patient. We have come to recognize the "collargol kidney," so called, which, when we have to decapsulate, shows perinephritic edema and congestion, staining of peripelvic tissues, capsular and subcapsular injection, edema and infiltration with collargol. If there is only a mild reaction and the kidney is operated on within a few days for some other cause, the appearance is again characteristic; the ureter is dark and the vessels on and near it injected. The pelvis is dark and the peripelvic tissue is stained. The whole kidney is congested and there are areas beneath the capsule which are stained with collargol.

There have been several cases reported ending in death coming on suddenly within a short time after the injection. There have been many cases which demanded drainage. The two cases at the Massachusetts General Hospital in which decapsulation was necessary following collargol injection have already been reported. There have been a number of reports of a smooth and painless injection with local symptoms starting a few hours later and going on to a severe reaction. These have notably been in cases of pyonephrosis or hydronephrosis or when there was an obstruction to the outflow necessitating the remaining behind of a considerable amount of silver salt, in some cases under slight tension. Several writers on the subject end by saying that a few days of reaction are generally unavoidable with tenderness, pain and constitutional symptoms, and advocate what treatment they deem advisable to meet these, in the shape of morphia, poultices over kidneys, etc.

Considerable experimental work has been done which shows the same damage to the kidneys. Eisendrath, using varying degrees of pressure, found with mild force that the collargol was in the peripelvic tissues and under the capsule, and when considerable strength was exerted, even in the lungs and other organs. In these latter cases also, the collargol went by direct extension into the tubules. Keyes, using no force beyond that necessary to distend the pelvis without tension, and even in certain cases putting a small amount in the lower end of the ureter and stopping the injection before the solution reached the pelvis, found microscopically that the collargol had gone into the blood vessels or lymphatics and was to be seen there and in the glom-

eruli. He did not find, however, any evidence of direct extension into the straight tubules.

Spitzer injected 12 c.c. of collargol into a kidney, which showed in the x-ray radiating into kidney substance.

In injecting kidneys post mortem, using no force beyond that necessary just to fill the pelvis, I found in one case that the straight tubules had been filled.

The attempts made to mitigate these difficulties have nearly all been along the lines of technic, that is, injection without force, very slowly and of as small amount and as weak a solution as will give a satisfactory picture. The various details of these factors have varied according to the varied experiences of the men working in this field. So far as I can find, only two attempts have been made with any success at all, using other preparations for the purpose of pyelography. Cargentos, a colloidal solution of silver oxide, has given good results in some cases. A suspension of silver iodide has been advocated by Kelly and Lewis, but has been very little used, as there are objections, first, of putting an insoluble foreign body in the kidney pelvis, and second, of finding a convenient preparation.

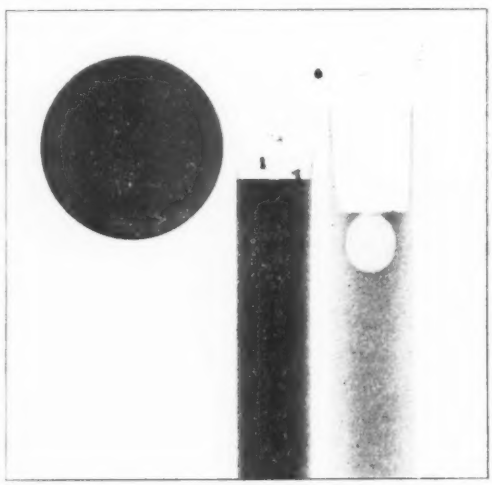
We may at this point consider a few facts and theories regarding silver salts, and in particular those used for the purpose under discussion. All silver salts are known to be to a greater or less extent irritating to the lining membranes of the human body. The organic salts were synthesized in the attempt to find some form which while still being efficient as a germicide, would be less irritating when applied to mucous membranes. But even the relatively innocuous argyrol, when used beyond certain concentrations, has considerable irritating effect in the urethra, though in the throat much higher strength can be used. This irritation is due to the reaction of the lining cells to the absorbed drug, for irritation is an early manifestation of poison, and the amount of poisoning done the body cells and tissue depends on the amount of any given chemical which is absorbed. Absorption demands first and foremost that the drug be soluble, while the rate of absorption depends on the particular surface with which the solution is in contact. For instance, the soluble products of metabolism are absorbed rapidly from the upper gut, while if the same products are introduced by rectum they enter the circulation more slowly. Signs of irritation also can occur in the organs in or by which the drug is excreted, as seen in the familiar example of too large doses of urotropin. In cases where a known soluble poison has been taken by mouth, one of the first efforts is, if possible, to add some other chemical which will by reaction render the original offender insoluble and hence relatively harmless.

While the fact that the presence of collargol in the kidney is irritating has been long known, it is only comparatively recently that the why of the question has been studied, and, as said before, these investigations seem to show that collargol gets out of the pelvis and into the kidney apparently in two ways: first, by absorption into the vessels or lymphatics about the pelvis and calices and reëxcretion into the glomeruli; and second, and only when undue force is used, by direct extension into the tubules. On the evidence presented both clinically and experimentally, I believe that we must consider collargol and the other soluble silver salts as absorbable poisons when injected into the renal pelvis and the damage done due to two factors: first, the already recognized mechanical one of force and speed of injection; and second, the factor so far little considered, of the absorbability and reëxcretion. The mechanical factor is well recognized and has, I believe, been intelligently dealt with.

On theoretical grounds, any attempt to find a satisfactory substance for pyelography among the soluble silver salts should be disregarded and our attention should be turned toward the insoluble forms.

About one and a half years ago, Kelly and Lewis reported the use of a 5% emulsion of silver iodide for pyelography. They claimed that it was non-irritating and gave a good shadow. Others who tried it found it impossible to use satisfactorily, for when the mucilage was stiff enough to hold the iodide in suspension, it was too stiff to use, and when thin enough to inject, it was worthless as a suspension and, moreover, had the danger of leaving behind in the pelvis a foreign substance. It was tried in Rochester and Boston, and doubtless elsewhere, but was discarded as useless. Their work was sufficiently convincing, however, to suggest further research, the results of which I am now presenting.

The fact that a 5% suspension throws a better shadow than 10% collargol was easily established, as is shown in the accompanying x-ray. (Plate No. 1.)



From x-ray department of Massachusetts General Hospital.

PLATE NO. 1.

Five per cent. argentide on left and ten per cent. collargol on right.

Believing that the main difficulties to be overcome lay in the vehicle for the suspension, I asked Mr. Joseph Godsoe, the pharmacist at the Massachusetts General Hospital, about ten months ago, to see what he could find. The necessary requisites are: a substance in itself non-irritating and sterile, sufficiently fluid to flow easily through a ureter catheter, and easily and quickly soluble and diffusible in water in order to fill evenly a kidney pelvis, not form any coagulum, and to leave the kidney pelvis as readily. Mucilage of quince seed was selected as offering the greatest possibilities. This was the vehicle used by Siter in 1905 when he used silver iodide in urethritis. We found, however, that any mucilage we made always became contaminated with a fungus in a short time. Moreover, dilution with water to make thin enough to use, resulted in a poor suspension.

The following is the method used by Mr. Godsoe: Quince seed, 100 grains, water 8 oz. Macerate for 24 hours with frequent agitation. Do not crush the seed. Strain through cloth. Add 2% boric acid up to 20 oz. It is important to extract with water and not with the boric acid solution, as boric acid solution does not make a good mucilage. Enough of this mucilage is added to 12½ c.c. of argentide to make 50 c.c., and vigorously shaken for two minutes. Again, the shaking is an essential part of the process. The resulting emulsion lasts several weeks, and is a thin, clear fluid flowing readily through a ureter catheter. It is on the method of preparation and the character of the resulting emulsion that the value of this substance depends.

The following experiments were undertaken to see what effect the emulsion had in the kidney. First, two guinea-pigs were inoculated, with negative results both in macroscopical and microscopical examinations of the kidneys, but as they had to be killed before coming out of ether, dogs were used.

EXPERIMENT 1. The bladder of a small dog was opened and the ureters catheterized; the kidneys were exposed. In the left 1 c.c. and in the right ¾ of one c.c. of the emulsion were allowed to run slowly by gravity, giving apparent moderate distention. The catheters, which obturated, were removed within one minute, the dog killed one-half hour later. There was no evidence macroscopically or microscopically of any penetration into the kidney or absorption by vessels. The pelvis contained the larger part of the suspension.

EXPERIMENT 2. The same sized dog was selected and the bladder opened and ureters catheterized and the same amounts injected, the pressure being continuous 3 minutes and the dog killed one hour later. The macroscopical and microscopical examinations were again negative.

EXPERIMENT 3. With the same technic the left kidney was injected with ¾ of a c.c., continuous pressure for 3 minutes. On the right, however, 2½ c.c. were injected, using for one minute as much pressure as I thought could be borne without actual rupture of the pelvis. This dog was killed 30 hours later. The left side showed a slightly congested kidney with no other macroscopic change externally. On section the pelvis contained some of the emulsion, it was slightly reddened, more so around the papillae. Microscopically there was no evidence of penetration or absorption though the congestion was as noted. The right ureter was dilated and blackened, the peripelvic tissues matted together and edematous. The kidney was enlarged and capsular veins congested. On section, the pelvis and calices were much congested, and in one place, extending from a papilla to the cortex about 2 mm. wide, was an infarct of emulsion in the tubules. There was no evidence of subcapsular deposit nor was any of the emulsion seen outside the pelvis, aside from the one infarct noted. Microscopically the above observations were confirmed.

EXPERIMENT 4. The right ureter was injected with ¾ of a c.c. and then tied. The dog was killed 30 hours later. The kidney and ureter were much congested, as was the pelvis on section, but nowhere, either macroscopically or microscopically, was there evidence of the emulsion outside of the pelvis of the kidney.

EXPERIMENT 5. The right side was injected with 1 c.c. of a watery suspension of the argentide and the left with the same amount of the mucilage without the silver salt. Twenty-four hours later the left side showed no reaction of any kind; on the right there was moderate congestion, but neither macroscopically nor microscopically was there any evidence of absorption or penetration.

EXPERIMENT 6. The right kidney was injected with 1 c.c. of 10% collargol and the left with 1 c.c. of 5% argentide emulsion, both under as nearly equal conditions as possible. The dog was killed 48 hours later. The left shows the same picture as noted above, while the right was more enlarged and congested, the peripelvic tissues edematous and slightly stained. There are two spots of subcapsular infiltration. The ureters are markedly different. I think the picture conveys a fair idea of the condition. (Plate 2.)

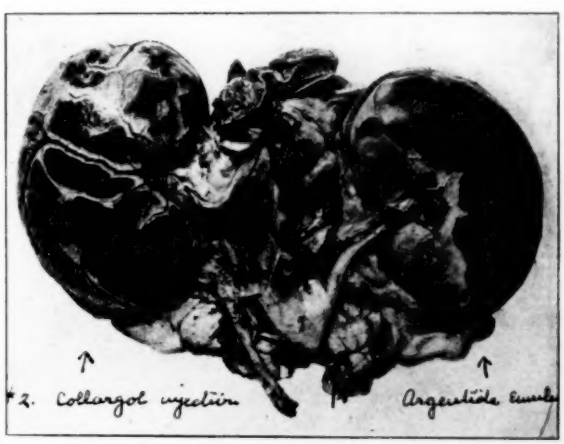


PLATE NO. 2.

In all these experiments, with the one exception, the injection was made as gently as in the human patients.

These show, I think, that this preparation is not, as Kelly and Lewis claimed for their emul-

sion, entirely non-irritating, but it does fulfil the theoretical requirements laid down above in that it is non-absorbable and hence only slightly irritating.

We have used this emulsion on the genito-urinary service at the Massachusetts General Hospital for about three months with uniformly good results as regards pictures, far better than with collargol. There have been no cases with anything more than the temporary reaction caused by the cystoscopy and the filling of the renal pelvis, and no untoward after-results. We have taken x-rays one, two and three days afterward in several cases. In two, both pathological pelves, there was a marked residue the next day. In one this was, however, gone the second day. The other showed small shadows five days later. The kidney was removed the sixth day following injection. On section there were very fine specks of argentide in a few spots near the flattened papillae, not adherent to mucous membrane. The pyonephrotic cavity was remarkably clean, considering the previous pus from that side. Microscopically there was no evidence of absorption. In two other cases there was a very slight doubtful residue the day after by x-ray. In three cases the kidney was operated on, one in twenty-four hours, and one in forty-eight hours, and one in six days. The first one was exposed, the upper part of the ureter and pelvis carefully examined, and finally opened. There was no evidence of irritation and none of the emulsion seen. This was a case of double pelvis and ureter with bleeding from the upper pelvis. The upper pelvis was injected, the lower one was not. At operation absolutely no difference could be seen in the appearance. The second case was a pyonephrosis, where the kidney was removed. Three c.c. of the emulsion was injected. The picture showed the destroyed character of the kidney very well. (Plate No. 3.) There was no macroscopic or microscopic evidence of the argentide anywhere in or around the pelvis or kidney. This kidney was estimated to have held at least 25 c.c., so that the shadows were thrown by about ½ to 1% strength. The third, described above, was a pyonephrosis, and the shadow is thrown by 3 c.c. of emulsion. The cavity held about 15 or 20 c.c. (Plate No. 4.)

I wish to call attention to three points of technic only. We use the barrel of a 10 c.c. syringe as the container, from which the emulsion flows into the pelvis. When the pictures are taken this is disconnected from the catheter, emptied, the piston inserted and as much of the emulsion as possible sucked out of the kidney pelvis. In the majority of the cases we can recover the larger part. The pelvis is then washed out once or twice with boric acid or salt solution. In all of the work with these cases small amounts, in no case over 3 c.c., have given us good shadows.

Summary. Collargol is an absorbable kidney poison when used in the renal pelvis.

The emulsion of argentide, as described here, is a clean, non-absorbable, opaque fluid, which can be used with the minimum danger to the

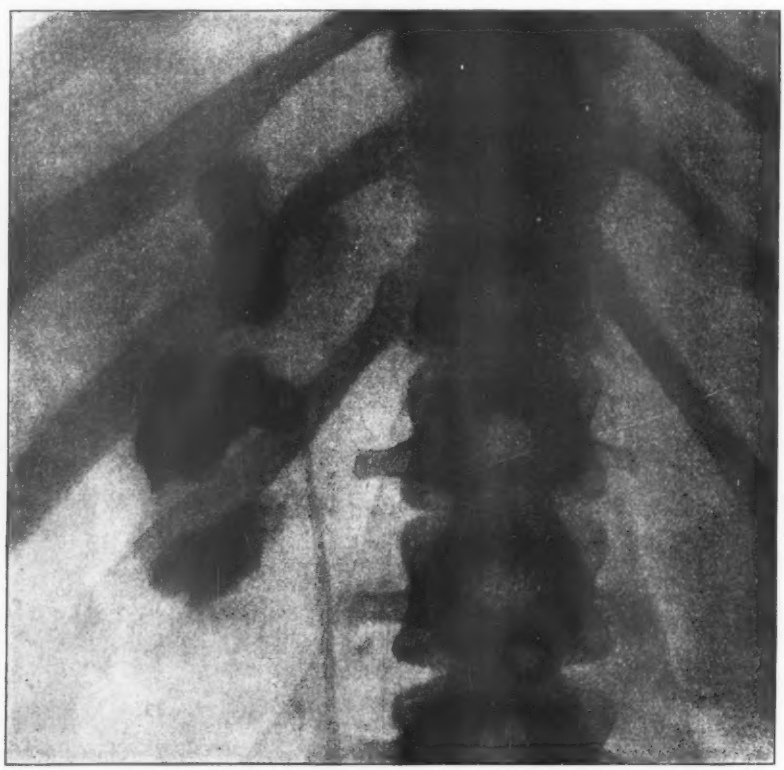
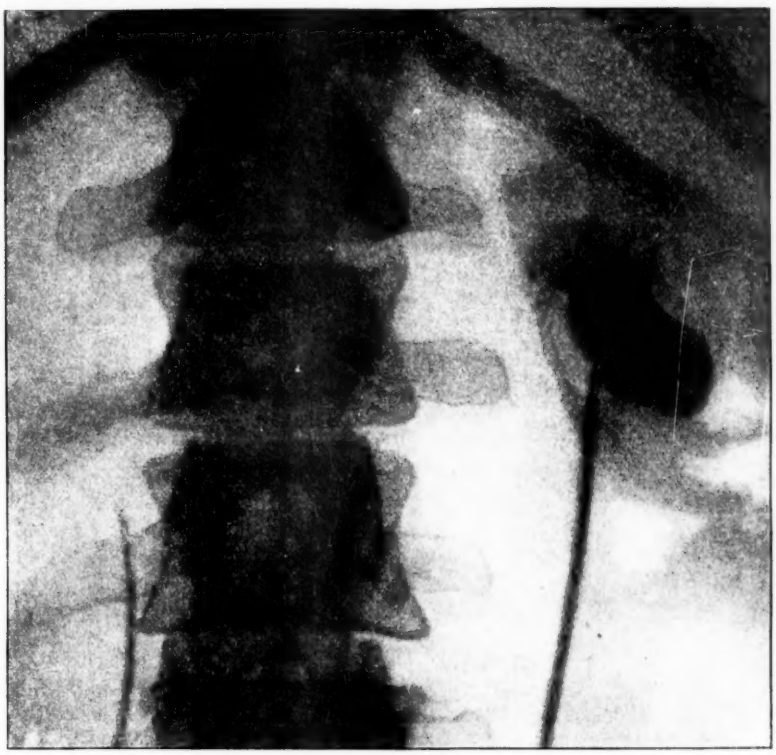


PLATE NO. 3.

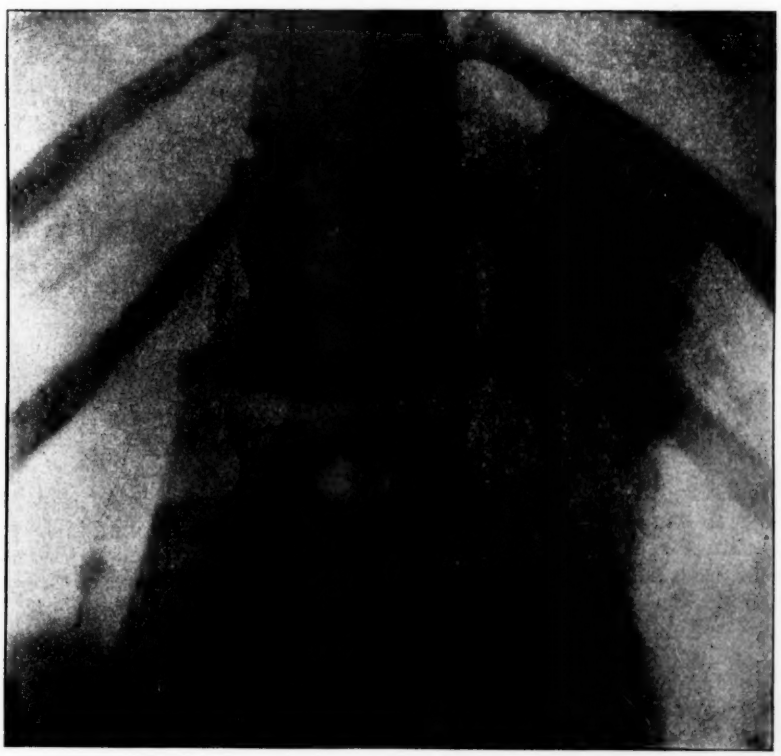
A pyonephrosis with extensively destroyed kidney: 3 c.c. used in injection. Estimated capacity 25 c.c.



From x-ray department of Massachusetts General Hospital.

PLATE No. 4.

Pyonephrosis with small destroyed kidney; 3 c.c. used for injection.



From x-ray department of Massachusetts General Hospital.

PLATE No. 5.

Three c.c. used for injection.

From x-ray department of Massachusetts General Hospital.

PLATE NO. 6.

One c.c. used for injection.

patient and maximum satisfaction to the surgeon.

(NOTE.—Silver iodide itself cannot be used for this preparation, but an accurately made saturated solution. Since this latter is somewhat difficult to make, and if not right may be irritating, I have simplified the formula by using a saturated solution already on the market.)

COMMUNICABLE DISEASES AND THEIR RELATION TO THE HANDLING OF FOOD.

ON Tuesday, January 19, 1915, a conference on communicable diseases and their relation to the handling of food was held at the Twentieth Century Club, Boston, under the auspices of the Boston Association for the Relief and Control of Tuberculosis. Dr. Edward O. Otis of Boston occupied the chair as presiding officer.

I.

INTRODUCTORY REMARKS.

BY EDWARD O. OTIS, M.D., BOSTON.

THAT food and drink may be a ready means of conveying disease is a generally recognized fact now that we know that most contagious diseases are communicated by specific germs.

The water used for drinking purposes may carry infectious germs or the food we eat may contain them.

When large bodies of men are assembled as in armies, the most solicitous attention is given by the sanitary department to the safeguard of the water and food supply, so that the fighting force may not be impaired by epidemics of communicable diseases spread by means of contaminated water or food.

One obvious source of danger is the contamination of food thru its preparation and handling by those afflicted with contagious diseases. Cases in which disease has been communicated in this way are not infrequent. I have only to refer, for example, to the epidemics caused by milk infected by some person who was suffering from a contagious disease. The epidemic of infectious tonsillitis which occurred in this vicinity a few years ago was caused in this way.

Typhoid fever is also spread thru contaminated food as well as by impure water. Not long ago at a church dinner in the city of Hanford, Calif., 84 persons who partook at that dinner of a dish of Spanish spaghetti contracted typhoid fever, and on investigation it was found that this dish had been prepared by a woman who was a typhoid carrier—and thru her, by the medium of the spaghetti dish, the germs of the disease had been communicated to the unfortunate sufferers.

Besides the acute infectious diseases which can thus be communicated—and the source of which is more easily traced, since the cause and effect are so direct and rapid, there are chronic, contagious diseases which undoubtedly can be conveyed thru the handling of food, especially tuberculosis and syphilis. Because, however, they are chronic and of slow incubation it is more difficult to trace them. No one, however, would care to be served with food by a person suffering from either of these diseases, or have their food prepared by such a person. The only way to avoid such a possibility would appear to be to require an examination on the part of the employer of all employees who prepare and handle food—but that is a question for us to consider.

As regards tuberculosis one of the ways in which the disease is conveyed is by ingestion—the entrance of the tubercle bacilli into the alimentary canal, and food contaminated with these bacilli is one way in which this may occur. Consequently it can readily be seen that those sufferign from active pulmonary tuberculosis and coughing may infect the food they prepare or handle.

The records of tuberculosis dispensaries show that there is not an inconsiderable number of tuberculous individuals employed as cooks or waiters in hotels and restaurants. For example, in one such dispensary in this city, from July 1 to December 1, 1914, there were 66 cases of well marked tuberculous infection in these occupations, more than half of them having reached the second or third stage of the disease. To give a few examples:—

A colored waiter in one of the hotels, in a very active stage of the disease.

A Greek waiter in a hotel in the advanced stage of the disease.

A pastry cook in a large hotel for 7 years with advanced, active tuberculosis.

Second cook in a large restaurant—very advanced case—sent to State Tuberculosis Hospital at Tewksbury.

Italian pastry cook at one of the largest and best hotels—advanced disease in both lungs and in the throat. Board of Health notified the hotel management to discontinue his services, and he was sent back to Italy.

That this danger has been recognized by employers of those who prepare and serve food is shown by the regulations—for example, of the Pennsylvania Railroad, where some 13,000 people are served every day, which requires that all employees in the railroad's restaurants and dining cars, who have to do with the preparation or serving of food, must be examined at least once every 30 days and oftener if for any reason it is thought advisable.

At the Bellevue Stratford Hotel, Philadelphia, a strict physical examination with sputum and lung tests is given to all candidates for employment. A monthly examination is also given to those who come in contact with guests in such a way that their ill health would be a source of danger, or to those who handle food.

Recently a bill was passed by the State Legislature of Pennsylvania, which, however, did not become a law, requiring every hotel employer to furnish a medical certificate for every employee, showing a clean bill of health, the cost to be sustained by the hotel employer.

This conference has been called to consider this whole subject of communicable diseases in relation to the handling of food—and from various standpoints—from that of the sanitarian, of the employer, and of the employee.

FIRST:

we wish to consider how great the danger is, and,

SECOND:

what public or private measures are feasible to obviate it.

As the first speaker, I have great pleasure in presenting to you the Commissioner of Health of the State of Massachusetts, Dr. McLaughlin.

II.

Dangers in Handling Food by Persons Afflicted with Communicable Diseases.

By Allan J. McLaughlin, M.D., Boston,

State Health Commissioner.

In view of the limited time allotted to the speakers (and I may say that it suits me exactly), I think I shall confine myself to the dangers of the so-called water-borne diseases, miscalled, with which I am most familiar. The danger of the transmission of disease by food is far greater than people appreciate. It has not received the attention which it deserves. For instance, in typhoid fever, our first thought is water; our second thought is milk. In the suppression of typhoid fever, we are able to eliminate water absolutely by taking proper measures. We have been able to do a great deal with milk, in the improvement of the milk supply, and yet, after all this is done, we have a rate of from five to ten deaths per one hundred thousand population, due to what we call residual typhoid; that is, what is left, and people have usually been satisfied with that; thought that was to be expected, and that no further measures were necessary. A good health officer considered his duty was fully performed when he had eliminated water and milk, and I may say that in this country, in a great many places, they have not gone that far yet. In Europe, it is easy to find what this residual typhoid is, because there they have eliminated water, and in many cases there is no milk problem. For instance, in the city of Naples, they have a water supply from an uninhabited mountain water shed, which comes through an old Roman aqueduct, and is absolutely pure. They have no milk problem,

because the Italian is a very suspicious individual, and he insists on seeing the milk come from the cow or from the goat into the receptacle that he brings out. They are very poor, and cannot afford to have ice, so the first thing they do is to boil the milk; not to kill the germs, but to preserve it. So practically milk is eliminated. It is largely so all over Europe. They do not use as much milk as Americans do, and, as a rule, they boil it before they use it. Even there, they have a rate of from five to ten deaths per hundred thousand, due to these other factors, which we call residual typhoid.

Now, what are the factors that go to make up this residual typhoid? You are all familiar with the three R's in early education. We have the so-called three F's in typhoid—fingers, food and flies. Whatever we may think about the fly as a more or less acknowledged factor in this, we must consider that fingers and food have a greater influence. The two must be considered, together, and as a combination, outside of water and milk, they constitute the biggest factor in the spread of typhoid. This contact factor, in which food and fingers play such a part, is the primitive way in which this disease has been perpetuated from early times, because in prehistoric times there was no such thing as a public water supply or a public milk supply, and family life was very close and intimate. This disease came down through the ages by means of fingers and food, and today, the more nearly we approach the primitive in the tenement houses in the city, the greater the transmission of disease by this contact method.

The previous speaker has mentioned the Hanford epidemic, and I am very glad he did. It is a very striking example which occurred within a very short time, showing what one dirty hand can do in the way of causing sudden death. This woman prepared the spaghetti at her own home, and, expecting to rebake it to some extent at the dinner, she prepared it and undoubtedly infected it with her dirty hands in the morning, and left it there to incubate in a very favorable medium, in which the germs enormously increased; then gave it further incubation at a very slight heat. To show that this heat would not kill the germs, they made an experiment, and using the same kind of an oven and sufficient heat to just nicely brown the top of the spaghetti, they found that the temperature in the interior was only 70 degrees Fahrenheit, which was nothing more than a comfortable incubation period for the germs. The result was that of the 150 people at the dinner ninety-three came down with typhoid, and while the ordinary period of incubation of typhoid is usually about fourteen days, on the average, in this outbreak it was less than seven days, showing that the dose of typhoid organisms that they must have received with this spaghetti was very large.

Cholera is very like typhoid. They are sister diseases in the matter of their transmission. We had a mysterious outbreak of cholera in a Manila prison in the Philippine Islands. At times we would have cholera in the remote provinces, but there would be no cholera within one hundred miles of Manila. Cholera broke out in a prison where we had the absolute control of the food and water supply for the institution, and also perfect control, if you will, over the prisoners. I suspected it was a question of fingers and food, and we took three hundred of those who had to do with the food; the cooks, waiters and others who had anything to do, even to the peeling of potatoes, in any way, with the food supply of the institution. Of those three hundred, we got 6% of cholera carriers. They were not sick at all, but those 6% were carrying cholera in their discharges, and with their personal habits, you can readily understand that there was plenty of opportunity to cause these cases which were happening from time to time.

A striking example at the Presidency General Hospital in Calcutta illustrates the point further. They had an outbreak where ten nurses came down, and six died. They all ate at the same table, and they had a new serving boy at that particular table. Professor Hafkin investigated the epidemic and found cholera germs in the remains of food; he found them in the water bucket in which they kept water to carry them over the period when the water was shut off. In this water bucket they had a dipper with a handle, which the boy was in the habit of dipping into the bucket, and sometimes his hand went in with the dipper. The professor took those two boys who handled the food, washed their hands in sterile water in a sterile vessel, and then he made a broth of that, which favors the cholera organism particularly, and had no trouble in recovering the germs from the water in which he washed their hands, showing that cholera germs were on the boys' hands. One of the boys had just washed his hands; at least, he said he had, but it was in a perfunctory way.

One other instance I will cite, and that was in 1908, in Manila. We had an outbreak in an American boarding house. We had a couple of deaths, and four or five cases which recovered. They had a meal in the evening, and at this meal there was served a dessert, some kind of a disturbance; I don't know what you would call it. It was made of gelatine, with a certain amount of fruit in it, and over this disturbance there was poured a custard-like dressing; a kind of a thin custard. To save time, this custard had been prepared by a Philippino cook in the morning, and left for the evening meal. You could not have made a better medium for the cholera organism. The cook had undoubtedly plunged his dirty fingers in this dressing, and left it to incubate through the day, and in the evening, when it was served on that dessert, it gave this terrible result. We went up there to get the boys, to examine them and find out if they were carriers, which Professor Hafkin was

able to demonstrate in Calcutta, but they had both escaped. They heard we were coming, and got away, but undoubtedly one of those boys was a cholera carrier.

The control of water and milk is easy, compared to the other factor, taking care of the contact in the family; of the carrier of disease, who is not sick, but who may be handing you your meals at a restaurant, on a Pullman car, or on a boat. It is a very serious problem, and difficult to handle. Suppose you knew all the carriers. You could not shut them up in jail. Many of them are bread winners. You possibly could prevent them from engaging in certain vocations, I think, with justice. It is a difficult problem at best, and after all, it is not possible to know all the carriers. You could not possibly hope for it. There must be some other way of making this particular factor less effective in causing disease. I think that way lies in general education in personal hygiene. In fact, it is the only way we will ever reach the causative factors in these diseases. You see that is a very difficult thing. You never can get all the people to do it. But you can get constant improvement, and in the end, effect great improvement in this way. People are not dirty from choice, as a rule; they are dirty from a combination of causes; ignorance, and lack of facilities for being clean, largely. The ignorance factor can be combated by public education; by the great agencies which we have now going down among the people: the district nursing associations, anti-tubercular associations, settlement workers, and other agencies which we have. They can do a great deal in combating this ignorance, and also we can look out and see by our building ordinances that they have proper facilities for keeping clean.

Then there is that other great group which is a perpetual danger to us, those who are handling our food supply. A great deal can be done by furnishing them with proper facilities. That is, the employers in hotels and restaurants can see that it is made easy for those people to keep clean. It takes some effort, under certain conditions, to keep clean. I have been myself in a country where I have been expected to take a bath in a teacup. It takes a certain amount of moral courage to go through it in that way, but by making it easy, there is no excuse. I repeat, I believe people are not dirty from choice. I think they are often dirty from the combination of circumstances which surrounds them.

III.

Dangers in Handling Food by Persons Afflicted with Communicable Diseases.

By Harry Linenthal, M.D., Boston.

The general proposition that it is dangerous for a person suffering from a communicable disease, or for one who is a carrier of the germs of such a disease to handle food products, is so well known that very little evidence is needed to establish the fact. Any health officer who has had anything to do with communicable diseases can point to his own experience to show extensive outbreaks of contagious diseases due to infected food. I have myself had occasion to trace a number of outbreaks of typhoid fever, scarlet fever, and septic sore throats, which were due to contaminated milk, infected by persons suffering from those diseases or, as is frequently the case in typhoid fever, by persons who were well, but who were carriers of the typhoid germs. The intimate and extensive relations which exist in present society are such that if a farmer on some distant farm fails to wash his hands in the morning, an outbreak of disease is apt to occur in a community hundreds of miles away from that farm.

Milk, however, is not the only source by which infection can be carried, as evidenced by the recent epidemic in California, where ninety-three persons contracted typhoid fever from a dish of spaghetti infected by a typhoid carrier in its preparation.

While it is comparatively easy to obtain epidemiological evidence of infection of food where large masses of people became infected, it is a very difficult matter, and most often impossible to demonstrate the source of infection of the sporadic case of contagious disease. Yet I think it is fair to assume that in many such sporadic cases the infection has been transmitted by food or food utensils handled by a person who was ill with the disease. In a disease like tuberculosis, which has such an insidious onset, it is impossible to trace the source of infection of any one case, but that the danger from infected food is real cannot be denied. The danger not only comes from coughing or sneezing, contaminating the food in that way, but from the handling of the food by persons ill with tuberculosis. There is experimental evidence to show that cultures of tubercle bacilli may be obtained from the hands of patients suffering from tuberculosis, after the ordinary perfunctory washing of the hands.

The danger from hand infection is extremely important in certain industries; I wonder how many of you have ever seen the process of dipping chocolates. The chocolate dipper has a tray of semi-liquid chocolate in front of her, and a tray with the hard candy filling. She picks up the hard candy, and literally washes her hands in the liquid chocolate until the candy is covered. The tray with the chocolate is exposed in front of her continually, and the possibility of infection is many times greater than under certain conditions where the exposure of the food is only momentary, such as is the case of a waiter, for instance, serving an order. You perhaps know that it is only the better class of candy that is dipped by hand. The cheaper grades are dipped by machinery, in a very cleanly way. The reason probably is that we insist that there

shall be a little frill on the top of the chocolate, and that can only be made by hand dipping. We demand a stimulation of our esthetic sense when our food is served to us, frequently at the expense of extremely unesthetic handling of the food in its preparation.

In this connection I would call attention to the practice in certain restaurants of serving some kinds of meats, such as chicken croquettes or lamb chops, with a little ornament consisting of a curled paper around a small stick. I never could quite understand the purpose of this ornament but it occurred to me that possibly the sagacious chef who originated the custom knew that the stimulation of the esthetic sense is productive of good digestion. The principle of the practice is very good physiologically, but its application is rather questionable. That ornament never particularly appealed to me, but I remained indifferent to it until some years ago I happened to be in a tenement house, one of the very worst in the West End, and I found a woman engaged in making these little paper ornaments for hotels and restaurants. I shall not attempt to describe the condition of the room and premises where these were made, but I will say that since then I much prefer to have my meats served unornamented.

The question of the proper handling of food not only relates to the danger of infection but is a question of general hygiene and cleanliness that we would like to know exists in the preparation and handling of our food supplies. Now what is the remedy? How can we guard our food supplies? To some, the solution is very simple and obvious. Enact a law, prohibiting any one who is either a carrier or is infected by disease from handling any food product. Such a solution is impracticable at the present time for the reason that there is not a sufficient public sentiment behind it. Any law which lacks the support of the public, is of no value.

The keynote of the situation, as Dr. McLaughlin has stated, is the education of the public; teach the public to demand that its food be handed to it in a cleanly way. This will accomplish a great deal more than legislation, at the present time, at any rate. Legislation may follow afterwards. I shall not enter into the ordinary methods that have proven of service in the education of the public, they are well known to the Association for the Relief and Control of Tuberculosis that has done such splendid work in its tuberculosis campaign. Such methods include press notices, lectures at women's organizations, labor organizations, exhibits, etc.

I wish to make the following suggestion which seems to me practical: A committee should be appointed by the Boston Association for Relief and Control of Tuberculosis. This committee in consultation with the Health Commissioner of Massachusetts should draw up regulations for various establishments where food is either prepared or handled. An effort should then be made to enlist the coöperation of several progressive firms by getting them to adopt such regulations. The more enlightened manufacturers could be made to realize that the adoption of such regulations would be an investment and would bring returns in increased output of the products they handle. To get such returns these firms would advertise that their products are put up in accordance with regulations approved by the Health Commissioner of Massachusetts. Not only would the adoption of such regulations set a standard for other firms to follow but by their advertisement would help to create a demand on the part of the public for pure, clean food.

Before closing I wish to call attention to one other aspect of the problem. A widespread educational campaign on the dangers of having food handled by persons ill with communicable diseases, and the adoption of certain standards by firms engaged in the manufacture or handling of food products would prevent some persons ill with tuberculosis from looking for employment in such industries. I recall the case of a young girl I saw about five or six years ago, who gave up her work in a department store because she was suffering from advanced pulmonary tuberculosis and she found the work too hard for her. She decided to look for easier work. At one time, she had had a little experience in chocolate dipping, and she decided she would go back and become a chocolate dipper. I have no doubt a great many instances of that kind occur, where patients suffering from tuberculosis will give up one kind of work because it proves too hard for them, and look for easier work, and very often the easier work lies in some line where they expose food to infection. If the public were educated to the fact that people who handle food supplies must be free from disease, perhaps a great many such cases might be prevented.

DR. CLEAVELAND FLOYD. Very striking examples of the way cholera and typhoid fever may be spread by means of food supplies are well known and it is well to remember that equally striking examples exist of where tuberculosis may have been carried through food supplies. We probably all have read of the experience of one physician in New York City, who noticed in getting on a street car that the conductor, who had been coughing, put the transfer that was given to him into his mouth, holding it there a few minutes before giving it to him. He decided not to use that transfer, but took it home and washed it in a sterile solution, then made a smear, and obtained tubercle bacilli from it. This is of importance in regard to the preparation of food, because we all know the women who pick out our chocolates when we want them assorted at the candy store, also lick on the labels on the outside of the packages. In that way, we have, if they have tuberculosis, a very convenient means of contaminating the chocolates we are going to consume.

I also have run across a very striking instance of infection of utensils, where there was a boy who was dying from tuberculosis, and a man

who frequently went into the house as a friend. The boy had an abhorrence of tuberculosis, and to encourage him, this friend used to drink from the same cup which the boy took his milk from, immediately after the boy had taken his portion. A short time after the boy had died, we saw this man and he had a well-marked case of pulmonary tuberculosis. As far as we could find out, that was the only method by which he could have acquired it. If this means anything to us, it demonstrates that we may acquire tuberculosis by ingestion from the handling of food by infected fingers and different utensils.

IV.

Tuberculosis in Its Relation to the Handling of Food.

By Cleaveland Floyd, M.D., Boston,

Director, Out-Patient Clinic, Boston Consumptives' Hospital.

The problem of tuberculosis in connection with the handling of public food supplies has appeared, during the past seven or eight years to those dealing with the question, through the Boston Consumptives Hospital as one of increasing importance. The chief places where tuberculosis, food, and the public meet are in our bakeshops, our restaurants and hotel cafés and their adjoining kitchens. This by no means covers those occupations in which the tuberculous patient is employed in the preparation of food, and while not infrequently the chocolate dippers in our candy factories, the cracker makers and fruit handlers have been found to be actively diseased, they are in the minority.

During the past seven years, among some six thousand cases of tuberculosis examined and provided for by the Boston Consumptives Hospital there occurred among those giving their occupation as cooks 56 cases, among waiters 109, among bakers 16, making a total of about 181 or 2% of all cases of tuberculosis reporting to us.

Investigation of these 181 cases showed the duration of illness to have varied between a few weeks to three years when they first reported for examination. One-third of this number showed from their sputum that they were throwing off tubercle bacilli when we first got in touch with them. It would seem, therefore, to be certain that a large number of these patients were actively supplying the public with food, many for a period of months or years, while suffering with a disease dangerous to public health in its most active form.

It is of further interest to note that almost without exception, when these patients were first reached by the Consumptives Hospital Clinic, they had voluntarily given up work because of not being equal to its demands.

The distribution of these patients among hotels and restaurants has been fairly uniform except among those houses which employ Greeks. Here the percentage of the tuberculous seems to be much higher. Such is the condition as found by only one institution in Boston and if it were possible to obtain accurate figures from all the medical institutions of the city together with those of private physicians the number of active cases of pulmonary tuberculosis among our food purveyors would be very largely increased.

From any point of view, whether from that of the employer, the employees or the public, this situation is one of importance. From the point of view of the public, the idea of having its food passed through diseased hands is revolting. Its danger is not a negligible one and is merely one of many sources of infection to the public at large. From the point of view of the employee, disability from disease is a very serious one, discontent with situation and occupation often go hand in hand with it and unreliability may frequently become the resulting characteristic of persons so afflicted. From the point of view of the employer the reputation of his house is all important and as the public becomes more and more educated as to the cause and spread of disease, the unsavory conditions pertaining in relation to the handling of food will be sought out, and correction demanded. Those business concerns that shall anticipate this movement cannot but be the gainers thereby. Anything which impairs the working power *or* the working force of a business enterprise is of serious detriment to it through the loss of time, inadequate service and engendered dissatisfaction. The public and the employer have a duty towards the employed as well as has the individual who serves the public to it and his employer. The problem of tuberculosis among those handling public food supplies, while important in itself, is only part of the great problem of health among the working class in any line. In Boston this disease can be fully met and in time controlled if coöperation can be established between the machinery already in existence in this city to combat this disease and employers of labor.

The incorporation of a fully-qualified physician as a working member of every large firm for the examination of all persons before their acceptance as employees will tend to detect many cases of diseases in its curable stages and not only save the life of the person afflicted but time and expense to the employer. Where it is possible the physician should be paid by and be responsible to the firm and should have a predominant voice as to whether a prospective employee is physically fit for his work or not. Where it is impossible for a concern to meet the expense entailed by retaining their own physician, the public clinics of the city should be utilized to a very much larger extent than at present and a certificate of health should always accompany that of good character, when a man is accepted for a position. Some such plan is at the present time in use in such concerns as The International Harvester Co., and Sears Roebuck

Co. of Chicago, and some other firms. Its general adoption will pay a hundred fold in greater efficiency and in lessened loss of time from sickness among employees and result in increased public support and confidence in those Houses thus actuated by a sense of their responsibility in matters of public health.

V.

DANGERS FROM SYPHILIS.

BY ABNER POST, M.D., BOSTON.

SYPHILIS is a communicable disease. In its communication, it is necessary that some appreciable discharge from an open sore of a syphilitic should be placed on either mucous membrane or some portion of the skin which is capable of absorption by a non-syphilitic person. At that spot, the inoculation takes place. There after an interval of some three or four weeks, the first manifestation of the disease in what is known as a primary sore, or chancre, is seen. Some six or seven weeks later occur what are known as secondary symptoms, which show that the disease is thoroughly a constitutional, and not a local one. Prominent among these symptoms are ulcerations about the mucous membranes, especially the mouth. It is only from these open sores that the communication of the disease can take place, so that patients with a primary sore, or with the ulcerations of the early secondary manifestations in the mouth, are practically the only patients who are really dangerous. Babies with hereditary syphilis might be included. Syphilis has the peculiarity of being transmitted to the offspring, and babies with hereditary disease are very subject to ulcerations in the mouth, which are capable of conveying the disease in exactly the same way as in the acquired disease of adults.

The microscopic entity, the bacterium of syphilis, is a very minute organism known as the spirocheta pallida, or better, treponema pallidum. It can be seen under proper microscopic conditions as a living entity, and its motions can be watched and studied. It is necessary for the understanding of the extent of the danger of communication, to realize that on the microscopic slide, where it is watched, this little entity loses its life, and can no longer be resuscitated, somewhere within an hour. In the pathological laboratory, when all possible pains are taken to preserve the life of the spirocheta, it is with difficulty that it is kept alive more than twenty-four hours. So we may see that the danger of transmission of syphilis is one that is confined to a limited number of syphilitics, and to a very short time after the material which contains the germ of the disease is separated from its parent body. We have, then, in its relation to food, in the first place, this certainty. It cannot be packed with food products and afford danger weeks or months later, when the package is opened. It is hardly possible that the germ could be contained in any cooking material which is first prepared at home, and served hours afterwards. It is hardly to be conceived that an ingenious cook could accidentally hit upon means of preserving this spirocheta, which have so far escaped the pathologist. Cases of syphilis, then, which are communicated by food, must show themselves, in the first place, somewhere in the region of the mouth or the face, at some spot where the material has first been brought in contact with the individual who partakes of it.

Of the total number of primary lesions of syphilis which are recognized as such, some ten per cent. are found on parts of the body which are uncovered by the clothing, and of these a certain number occur on the hands, and such inoculations on the hands and fingers are practically confined to those who have dealings with the sick,—physicians and nurses.

The rest of these lesions are almost all entirely in the mouth, lips, tongue, tonsils, or somewhere in their immediate vicinity. Of these inoculations about the mouth, a certain number are known to be the result of immediate contact of the syphilitic with the healthy individual, in kissing. A certain other number of such inoculations take place from the common use of a pipe. We all know how common it is for people working side by side, to pick up the pipe that was laid down on a bench in their immediate vicinity.

But, subtracting these obvious methods, there still remain a certain number of cases of syphilitic inoculation about the lips or the mouth, which can best be explained through the use of utensils which convey food. In the first place, the most common medium for the conveyance of syphilis is, I believe, the common drinking cup. Statistics on the exact method by which inoculation takes place are practically impossible, but if one takes a series of individuals who show syphilitic chancres on the lips or the tongue, one finds that a large portion of them are individuals who come in contact with a large number of persons who use a common drinking utensil. It is not always easy to trace such things, but occasionally one gets such a story as that of a young lady with a chancre on her lip, who could point back to a time when she was shut in with a large number of excursionists in a small railway station on a hot day in July. There was a single glass for drinking water, and overcome at last by heat and thirst, she, with some repugnance, drank from this glass. As far as one could trace back the time of inoculation, her chancre on the lip dated from that moment.

Some time ago a lady with a chancre on the lip explained that she believed she had received her inoculation in her own kitchen. She had been in the habit of working at culinary concoctions in company with her servant maid. They tasted and altered the material which they hoped to cook, and tested it by tasting, using a

common spoon; first the mistress, then the maid; then the mistress again. The mistress discovered, after this habit had been exercised a number of times, that the servant girl in the kitchen had sores in her mouth which the mistress believed to be syphilitic. The girl was immediately discharged, to find a place in somebody else's kitchen, so it was impossible to confirm the mistress's story of syphilitic lesions of the girl's mouth.

There are other inoculations of the same sort which are not so easily traced, but about which one can often draw the inference that they come from eating in a cheap, crowded and perhaps unclean eating house. One case comes to my mind of a woman with an inoculation somewhere within the mouth, about the gums, which had troubled her dentist and her physician, and after a series of weeks, she showed a general outbreak of syphilis, which could be traced back to a certain time in the summer when she spent a fortnight in a crowded boarding house at the seashore. Her vacation had been spent in a boarding house frequented by people of various sorts, and some one among them had evidently inoculated her with syphilis, perhaps through the failure to cleanse spoons, and forks and glasses, but at any rate, that was the time at which her inoculation took place.

I took particular pains to mention babies with inherited syphilis as having the lesions capable of conveying disease, and I did this because it is so very common with nurse girls and those in the care of infants to test the nursing bottle in their own mouths before putting it into the baby's, and afterwards, when the baby drops it, to repeat the same operation. The same thing is done with spoons when the baby is fed with a spoon. In this way, there are occasional inoculations which take place from a syphilitic nurse girl to a healthy baby, or from a syphilitic baby to a previously healthy nurse. The danger, then, you can see, comes from persons with whom one comes into pretty close contact at the time when they themselves are dangerous. When I speak of boarding houses and the danger in such places of inoculation, which I feel sure exists, I want to say that while such danger comes undoubtedly from syphilitic waiters and waitresses, the danger also exists, and is perhaps fully as great from unclean guests, who are themselves careless, and the utensils which they have used and which have not been properly cleansed.

One cannot speak of such dangers without in the first place wondering a little bit as to their number, and next, as to how one is to avoid them. The number of such inoculations is certainly not very great, but it is sufficiently large so that we have them always with us. It is possible, at any moment, to produce cases for purposes of instruction. They are preventable. In the first place, the common drinking cup should go. Fortunately, it has already disappeared in many localities, but it is still to be found in a good many workshops. It is a matter of some difficulty to make sure that proper means, by separate cups or the cleanliness of a cup which has been used, is provided.

We have means of controlling the spread of syphilis. Our modern methods, by salvarsan, or 606, allow us, not to cure the individual with such certainty as we hoped a few years ago, but its use controls the external and dangerous manifestations of the disease. So that one may find the treponema on the surface sores at one moment, and within a few hours after the administration of salvarsan, such treponema can no longer be found, and it is perhaps the most wonderful thing of all that this is practically the only disease against which the community fails to guard itself. We have been so long taught that syphilis carries with it a disgrace; that it is the fault of the individual, that it is very hard indeed for us to learn that at least 50% of our cases, if we include all the innocent infections and the inherited cases, are of innocent origin, and it is very necessary for us to know that while the cases of infection through food are not as many as those of some other diseases that have been mentioned, they are certainly too numerous to be allowed to go on without attempt on our part to prevent them. What is being done to limit the spread of the disease? The attempts to control it are individual rather than official. A free dose of salvarsan for the syphilitic patient is one of the most difficult of all remedies to obtain. I think I am right in saying that the only effort made by the State authorites to deal with the matter consists in the commitment to the State Hospital at Tewksbury and treatment there. I think we have a right, and it is our duty to ourselves and our suffering brothers and sisters and to the community, to demand that syphilitic patients be provided with proper medical treatment just as much as patients with typhoid or tuberculosis.

VI.

Suggestions in the Employment of Labor.

By T. K. Cory, Boston.

As stated by the Chairman, we hire a great many people. We have on our regular pay roll about 2250 people, in the store proper. In order to keep that number up, we must employ about 3500 to 4000 people a year. They leave because of moving out of town, better positions offered, and a great number of them because they get married. I am not recommending that so that you will come to the department stores for employment, but we lose a great many people through getting married. So it would be almost impossible to require a physical examination of that number of people. However, in our application blank we ask the question about their health in several ways. Then after they are in our em-

ploy, they are turned over to the medical department we have in the store, that handles from 150 to 200 people a day. We have taught the people that the best thing to do is not to wait until anything happens, but to use what we call the clinic, and use it freely, in order to prevent anything from happening. A little while ago I was up in the clinic, and a young fellow had lost a finger; caught it in the elevator machinery, and pulled the finger off. I watched them dress that finger, and a few minutes afterward one of the girls came up stairs, and I said, "What's the matter with you?" She said, "Why, I don't know; I got a pin scratch somewhere, and I guess this is it." That was more important than the fellow that lost the finger. We expected him to go to the clinic, but the fact that we can train our people to go there for pin pricks that are so small that she had to stop to find it, is of great importance, I think,—what our professional men here are trying to have people do.

We also have, in the store, shower baths for people that work where it is warm, or where they are exposed more or less, and the free use of soap. I believe soap is about the only thing we do use now that really proves we are civilized. We have in our shop a health committee. We have three nurses. One nurse is a visiting nurse, and she does an immense amount of good, because she tells your home conditions.

We send all our people to Rutland, or to some of the camps, when we first discover tuberculosis. That we pay for. We allow them their expenses, and in some cases a little bit more than their expenses. We have at the present time, I think, about six or seven cases that we are looking out for, of that kind. We have never yet allowed a case to get beyond the Rutland point before it was discovered. That means that they will accept them in Rutland if there is a fairly good chance of their getting well. We have several in the store today who have graduated and are back, and who have married and are raising families, who, as far as we know, are perfectly cured. We have two girls who have just come back. One of them had tubercular glands, and the other one had trouble with the lungs.

Now, someone, in speaking here, used the expression that if the stores, if the shops and the factories did not do these things because of philanthropy, that they ought to be done because of good business. I am not going to say that we are doing this for philanthropy or good business. However, it is splendid business. I can't understand why business men who have problems to solve and who are in the habit of solving problems, can allow their human machines to be as run-down and to be given as little care as they give in the average shop and the average factory. There seems to be a penalty for being a human being. Any business man or any manufacturer will take his machinery and will see that it has the best of belts, that the gears are right, that it is lubricated with the very best oil, and the part of that machine—the only part that he cannot build—the machine with brains, because it is a human being, he allows to run down until he can't get efficiency out of the machine, or the person who is trying to run it. I should think that, if nothing else, would teach the business man that the proper thing to do is to look out for his help, and look out for his people. Now, my friend, Henry Abrahams, is going to follow me, and I know he is going to say something about how a person has got to live. They have got to live, and labor must be protected by the employer, and it is his right and his duty to protect that labor. What I mean by that is this: Unless a man can commence his reform in his own establishment it is a piece of impertinence for him to go out to reform the community until he has done the right thing at home.

I spoke a while ago when I had more than ten minutes, to a lot of business men who were reforming the city of Worcester, and I know that if they were going to hand to Worcester the kind of reform that they had in their own establishments, then I would say, "God help Worcester!" I believe that every business man, as a good citizen, has the right and the duty to protect his employees, to make them well and to make them happy, from two standpoints; first, because it is good business, and second, because it is philanthropy.

If you should ask me to sum up whether we have a successful business or not, I should say that the night before Christmas, as we stood on our first floor, a lot of well, happy people went out and wished us a Merry Christmas and a Happy New Year. I was standing talking to Mr. Edward Filene and he said, "Has the year been successful?" I said, "Yes. Our people are going out of here tonight happy, and they wish us well, and we have done our duty. If we have made money, that does not count so much. The thing that really counts is that the people are well and happy, and they wish us, as I wish you all, well."

DR. OTIS. It gives me great pleasure to introduce Mr. Henry Abrahams, Secretary of the Labor Union.

VII.

SUGGESTIONS IN THE EMPLOYMENT OF LABOR.

BY HENRY ABRAHAMS,

Secretary Central Labor Union.

I want to say amen to all that the doctors have been saying in relation to the handling of food. But in all large assemblies such as this there is always someone who perhaps strikes a discordant note, and I am going to be that one, I suppose. I want to say if all our employers were like Mr. Cory, perhaps the world would be a great deal

better. In one of the circulars on the table here today I saw that it was necessary not to overwork, also to keep clean. It costs money to keep clean; some people don't think that. I believe in a fair day's work for a fair day's pay, but I don't believe in that kind of a day's work from which a man goes home to his family and says, "Never mind, I don't care about any supper. I am tired; I guess I'll go to bed." I don't care about that kind of a day's work; a man exhausts too much physical energy.

Our physicians have said a great deal, and they are entitled to a great deal of credit for what the medical fraternity is doing to prevent disease. It is a question in my mind if they have got right down to the cause of the disease. They understand the effect all right, and I believe that a great many of them know the cause, but somehow or other, nobody says anything about it. You wouldn't expect a man, a married man having three children, a family of 5, who was getting $1.75 or $2 a day to live under the very best conditions. It is all very well for a number of social workers, perhaps, or a number of philanthropists to tell that man, "You ought to be clean; you ought to do this, and you ought to do that," but if you want to do away with tuberculosis, in my humble opinion, one of the ways, and one of the best ways, is to raise the standard of living. It is all very well to say, "Eat good food and plenty of it," but the man has got to get a living wage. (I learned that in Filene's.) In order to get good food, and plenty of it, he has got to have a living wage. There is no question about that. You can tell a man that he ought to dress warmly, and all that sort of thing, but he has got to have money to do it. You tell a man his children ought to be well clad. So they ought. You can tell a man that everything about his home ought to be in a sanitary condition. That's true. There isn't any question about it; but he has got to have the wages, for the money he gets Saturday night determines where and how he shall live. Don't forget that part of it. That is why I am a trade unionist. I believe that I can help to prevent tuberculosis by seeing that a man is better housed. That's the question that should interest the community. The worker should be well housed; sanitary conditions should be as good at home as they are in the factory or in the shop. Conditions in the factory today are a great deal better than when I was a boy. I don't want to describe the conditions that existed in the various industries when I was a boy, a good many years ago, but they are better today.

Let me say, perhaps a great deal of what has been said here today ought to be taught in the schools. Perhaps, as has been suggested by one of the speakers, it would be a good idea for the doctors to visit the labor unions once again. Sometimes you forget that we are over 80% of the population. You don't seem to remember that, and you don't seem to remember that our doors are always open. We are not a secret organization, but are always willing to hear of something that will do something more for the community. We are always willing to work with you. Let me assure the medical fraternity of Massachusetts, the medical association, if they will do what they did once before, send a number of doctors around to visit the various labor organizations, we will guarantee them a hearing and we will do what we can to help them.

Edward O. Otis, M.D. I would say, in summing up what we have heard from others, that the main emphasis in the discussion seems to be upon the education of the public in general hygiene and cleanliness, dwelt upon by Dr. McLaughlin and Dr. Linenthal and others. Dr. Linenthal also suggests that a committee might be appointed to draw up a set of regulations for places where food is prepared and handled; those regulations should be followed by those who employ cooks, handlers and servers of food. These seem to be the main points that were emphasized, education of the people in proper hygiene, and cleanliness, and in the examination of those who handle food, cook food, serve food, or assist in cooking food.

This conference, of course, did not intend to draw up any definite rules to present, but simply, and its object I think has been accomplished, to consider the whole subject of the matter of preparing food, having it cleanly, and having it prepared by those who are not infected with various diseases. It seems to be self-evident that so long as both acute and chronic diseases are so prevalent, particularly tuberculosis, typhoid fever, and so on, that those who are serving food to the general public should in some way be examined and certified, that they are not suffering from either acute or chronic diseases, so that those partaking of food in restaurants and hotels shall be safeguarded. If this conference has simply set us to thinking about this matter it has accomplished its purpose.

In behalf of the conference I wish to thank those who have been kind enough to give us their attention.

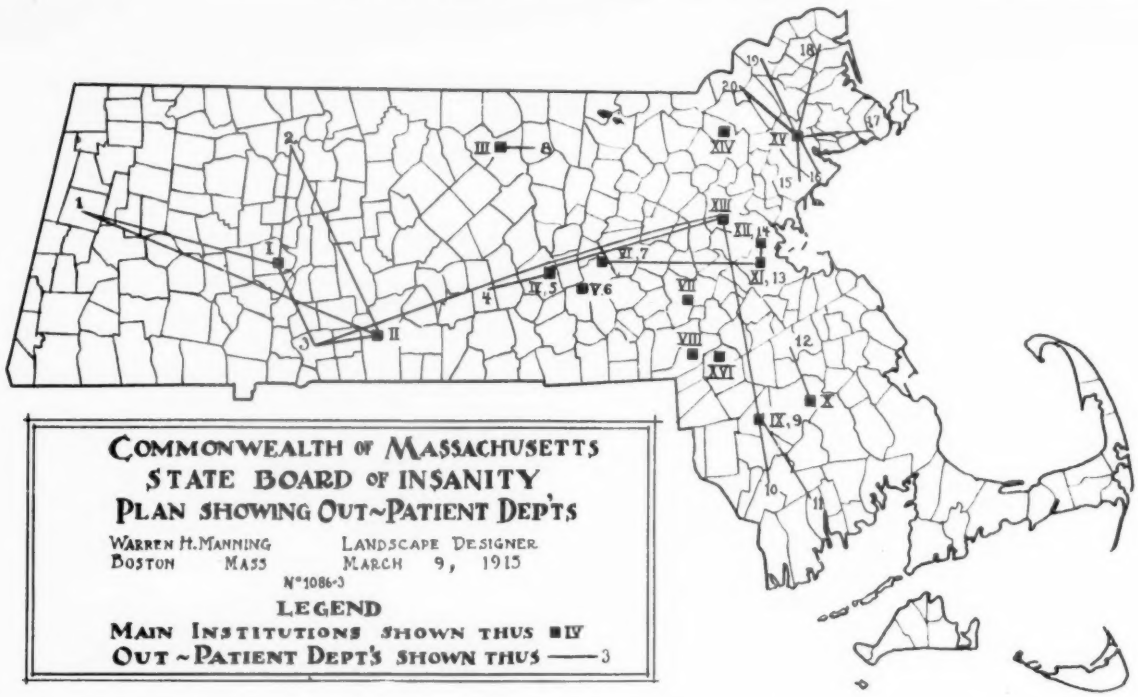
(The meeting was then adjourned.)

NOTE ON RECENT EXTENSION OF OUTPATIENT WORK IN MASSACHUSETTS HOSPITALS FOR THE INSANE.*

By A. Warren Stearns, M.D., Boston.

Once more Massachusetts has taken the lead in forwarding the scientific and human care of the

* Being State Board of Insanity Contributions, No. 40 (1915.9). (*Bibliographical Note.*—The previous State Board of Insanity Contribution (1915.8) was by E. E. Southard, entitled "On the Direction of Research as to the Analysis of Cortical Stigmata and Focal Lesions in Certain Psychoses," published in the *Transactions of the Association of American Physicians for the Year 1914*).



mentally ill. That the care of such patients is part of the duty of the state has been recognized for more than eighty years, and eleven years ago Massachusetts took upon herself the work of maintaining and treating all dependent insane. The Massachusetts School for the Feeble-Minded has conducted a clinic once a week for more than twenty-five years, but till recently, this has been the only activity of any hospital staff outside the walls of its own buildings. Since 1885 the Massachusetts Board of Insanity has maintained a family-care service, during which time 1242 patients have been boarded out in homes. Still more recently several hospitals have taken up this work, and some have done a considerable amount of after-care and social service work. On Jan. 1, 1913, the Psychopathic Hospital in Boston opened the first full-fledged out-patient department to be conducted by any hospital for the insane in this state. Success was immediate, over 1000 new patients visiting the clinic during the first year, and active social service and after-care was begun.[1] In August, 1914, the Board of Insanity determined to make this work state wide, and each hospital was asked to arrange for an out-patient department as such. The work of these departments was divided, roughly, into four parts, namely, the clinic, after-care, family care, and mental hygiene. Most important, perhaps, are the clinics.[2] Because of varying conditions, each hospital was left to its own resources in formulating a plan for this work. All that was desired was that a clinic should be convenient for each large city. Where a hospital is in a large city, the clinics are held at the hospital itself, others are held at general hospitals or public buildings in neighboring cities. These clinics are conducted by members of the staff of the nearest hospital. Some hospitals conduct but one clinic, while one conducts as many as six. They vary in frequency, from one which is daily (Psychopathic Hospital) to several which are monthly. Doctors in the community are notified of the dates of such clinics and are invited to send patients for consultation or treatment. Also, advice and treatment is given without charge to all cases of nervous or mental disease that apply, especial attention being given to former hospital patients. After-care and social service in the state hospitals are nearly synonymous, and more than ten institutions are doing this work to a greater or less extent. The clinics are of especial value in after-care, as patients find it more easy to report when near. As rapidly as possible the state family-care patients are being turned over to the hospital nearest their boarding place and the hospitals themselves are placing patients out rapidly. There is no doubt that all of this out-patient activity is the most practical sort of mental hygiene, but an additional effort is being made to interest the medical profession in the work of the hospitals, and many of the speakers for the Massachusetts Society for Mental Hygiene are in the state service. This vast movement is a two-edged sword, for important as it is to patients and community, it is of equal value in the socialization of the hospitals.

The accompanying map illustrates the work in a concise manner. The Roman numerals show approximate hospital locations and the plain numerals indicate clinics, the lines connecting each hospital with the clinics which it is conducting in whole or in part.

HOSPITALS.

I. Northampton State Hospital. Clinics at Pittsfield (1), Greenfield (2), and Springfield (3).
II. Monson State Hospital. Clinics at 1, 2, and 3, with Northampton.
III. Gardner Colony. Clinics at Fitchburg (8).
IV. Worcester State Hospital. Clinics at Spencer (4), and Worcester (5).
V. Worcester State Asylum. Clinics at Worcester (6).
VI. Westboro State Hospital. Clinics at Westboro (7), and Boston (13).
VII. Medfield State Hospital. No clinic.
VIII. Wrentham School. No clinic.
IX. Taunton State Hospital. Clinics at Taunton (9), Fall River (10), and New Bedford (11).
X. Bridgewater State Hospital. Clinic at Brockton (12).
XI. Boston State Hospital. Clinic at Boston (Psychopathic Hospital) (14).
XII. Psychopathic Hospital. Clinic at Boston (14). Dept. Boston State Hospital.
XIII. Massachusetts School for the Feeble-Minded. Clinic at Waverley and also joint clinic at 3, 5, and 9 with Northampton, Worcester and Taunton resp.
XIV. State Infirmary at Tewksbury. No clinic. It it hoped that one will be located at Lowell later.
XV. Danvers State Hospital. Clinics at Lynn (15), Salem (16), Gloucester (17), Newburyport (18), Haverhill (19), and Lawrence (20).
XVI. Foxboro State Hospital. No clinic.

REFERENCES.

[1] The After-Care Program and Results of the Psychopathic Hospital, Boston, 1913-1914, BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxi, No. 23, p. 850.
[2] For detail of organization see Massachusetts State Board of Insanity Bulletins, Nos. 1, 2, 3, 4 and 5.

Reports of Societies.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

First Annual Meeting, held in Atlantic City, N. J., June 22, 1914.

The President, DR. GERALD B. WEBB, of Colorado Springs, Colorado, in the chair.

A Historical Sketch. DR. MARTIN J. SYNNOTT of Montclair, N. J., gave a brief account of the way in which the idea of this society had been conceived and of the manner in which its organization was effected. He stated that the idea had first occurred to him, in 1912, that a "Society of Vaccine Therapists" made up of men who had worked in the Praed Street Laboratories might prove mutually advantageous to the members. He had therefore written to the men in the United States and Canada who had taken the course in the Inoculation Department of St. Mary's, and later to those who had studied with Metchnikoff, Ehrlich, Wassermann, and in some of the other famous laboratories of Europe. Dr. Gerald B. Webb had suggested the more concise and inclusive title for the organization, "The American Association of Immunologists," thereby widening the scope of the society beyond the original conception of the speaker. A first attempt of organization was made in Washington in May, 1913, during the time of meeting of the Association of American Physicians, but was not consummated until June 19, 1913, at Minneapolis, Minn., during the session of the American Association. They had now sixty charter members and eight applications for membership. The speaker predicted that they would in a few years be one of the most important medical organizations on this continent, and said he believed with Sir Almroth E. Wright that the physician of the future would be an immunologist.

The Production, through Immunization, of Specific Ferments against Bacteria; as Detected by the Abderhalden Test. MR. GEORGE H. SMITH of Glenolden, Pa., presented this paper which was based on the fact first demonstrated by Abderhalden in his pregnancy reaction, that specific proteolytic ferments were elaborated by the body in response to the parenteral introduction of foreign protein. The writer stated that they had proposed to test the limits of this specificity of ferment production by employing bacterial proteins. Rabbits received immunizing courses with Staphylococcus aureus, Staphylococcus albus, Streptococcus, Pneumococcus, B. influenzae, M. catarrhalis, and with a mixture of all. The substrates were prepared from the organisms by washing and drying heavy suspensions. The technic of Abderhalden was employed, using one and one-half c.c. of serum and ten mgrs. of the substrate. The results demonstrated that each serum was able to effect a marked degradation of the homologous substrate, while with the other substrates reactions were negative. Several slight nonspecific reactions were obtained with Streptococcus and Staphylococcus albus substrates. It had been demonstrated that these were due to accidental infection. Sera from rabbits immunized with the mixture degraded all the substrates. The results indicated a relatively high degree of specificity in ferment production.

Professor E. C. L. MILLER of Richmond, Va., said that Mr. Smith had given a very good demonstration of the problem he had attempted to solve. From the biological standpoint it fitted in with and corroborated what they had been thinking for some time. It was obvious that a unicellular organism must of necessity form a ferment if it was to live. If the protein food materials outside the organism were insoluble, as they often were, they must be made soluble by digestion that they might diffuse into the organism. To accomplish this the unicellular organism separated from itself something that they had designated an enzyme, and this power of enzyme formation was one of the striking and essential characteristics of unicellular organisms. It was becoming clearer and clearer that a human body was made up of a mass of cells that were in many respects still unicellular creatures; Nature in working up from the unicellular to the multicellular had not so much produced a new kind of creature as a colony or interdependent community of unicellular forms, each one of which to a large extent retained its primitive functions. The function of reproduction was well shown in the process of repair. The function of motion was uncertain in even the unicellular forms. The function of enzyme formation was probably involved in all cell nutrition and could now be demonstrated in the laboratory by means of the Abderhalden reaction. That each cell maintained to a large extent an independent existence capable of motion, nutrition, reproduction, and response to stimulation had lately been demonstrated by the actual cultivation of tissue cells without the

body. All these factors worked together and tended to build up a view of the nature of our bodies that they had not held before. This work of Mr. Smith's showed clearly the specific nature of the ferments produced. He had seemed to show the cells as possessing an intelligence. They were presented with the problem "Devise and produce an enzyme to dissolve the bacteria injected." This was an entirely new problem and yet the cells responded with an enzyme so perfectly adapted to its functions that it would dissolve the substance in question and nothing else. By using such enzymes they often distinguished between substances otherwise indistinguishable.

Experience with Abderhalden Serum Diagnosis Reaction for Carcinoma. DR. OSCAR BERGHAUSEN of Cincinnati, Ohio, read this paper. He said that in their work the technique of Abderhalden had been followed for the most part, the only important deviation being that the serum was subjected to a preliminary dialysis before adding tissue. It was found that the serum of carcinomatous patients was most apt to digest tissues which corresponded most closely to the affected region of the patient. These results led to the conclusion that probably the embryonal origin was of some importance and according to this assumption those tissues that most probably represented the anatomic pathology of the case were selected. For the most part it was found that serum from a carcinoma patient digested tissue of the same origin as the affected tissue. Although serum usually digested only certain tissues, contrary results were occasionally obtained. The results of cases studied showed that with the exception of one case each of pregnancy, elephantiasis, empyema of the thorax, and tuberculosis of the spine, all control cases gave negative reactions. Serum from malignant cases digested some form of malignant tissue in every instance.

Abderhalden's Pregnancy Test. DR. WILLIAM WHITRIDGE WILLIAMS and DR. CLARENCE B. INGRAHAM of Denver, Col., presented this communication. After giving a brief explanation of the theoretical basis of the Abderhalden test, they stated that it had been applied to known and doubtful cases of pregnancy. Aside from the strict observance of the Abderhalden technic, the writers emphasized that the blood should be taken from a convenient vein under strict aseptic precautions with a dry needle kept in a sterile container. The serum should be allowed to clot spontaneously as centrifugalization frequently caused hemolysis. The serum should contain as few dialyzable substances as possible; it must be absolutely free from hemoglobin and from formed elements. If any of these conditions were disregarded, experience had shown that incorrect results were obtained. In the series of cases tested only two were of value differentially. One was a fibroid of the uterus and the other an ovarian cyst. Both gave negative reactions. The earliest case to give a positive reaction had missed menstruation only four days. Another case eleven days postpartum reacted positively. Observations of toxemic cases with albumin in the urine and increasing blood pressure, gave very slightly positive results with both the dialysis and optical methods. This confirmed the results obtained by Rubesamen in eclampsia cases. The test for pregnancy as worked out by Abderhalden might be considered a definite and reliable reaction.

Chronic Infections and Recovery without Immunity. DR. A. PARKER HITCHENS of Glenolden, Pa., read this paper. He stated that in the parenteral digestion of bacteria, the bacterial proteins were digested by the specific ferments in order that they might be eliminated from the tissues. This effect sometimes failed while the poisonous action of the other part was always manifested. This being the case the suggestion forced itself upon them that there was a physical basis underlying the action of these two parts. That was to say the action of the poisonous part never failed because it was diffusible and the tissue offered no barrier to it, while the non-poisonous part was not diffusible and under certain conditions the collection of cells in which it was located did not permit it to reach those cells capable of responding to its action. Accordingly, on the supposition that the molecule of the poisonous part was relatively small and that of the non-poisonous part relatively large they might divide infections into three classes: 1. Those in which the bacteria were surrounded by a firm wall of inflammatory tissue so dense and so perfect that antibacterial ferments were unable to penetrate the bacteria. The non-poisonous part liberated by autolysis or by ferments within the focus of infection did not escape through the capsule and the resistance of the host was not increased. 2. Those in which the zone of inflammatory tissue was less dense and less perfect. The non-poisonous part of the protein molecule could not penetrate the barrier of inflammatory tissue, but specific ferments formed as a result of vaccination or auto-inoculation might penetrate in sufficient quantity to give positive therapeutic results. The staphylococcus furuncle was an example of this class. 3. Those in which the infecting bacteria were not surrounded by a zone of inflammatory tissue which inhibited the activity of the non-poisonous part and the resultant newly formed ferments came in contact with the bacteria without hindrance. The self limited infections like typhoid fever were examples of this class. For obvious reasons infections belonging strictly to the first class could not be benefited by vaccine treatment. In the third class one might confidently expect much benefit from such treatment. Typical infections of the second class were no more difficult to treat than those of the third class. The diagnosis was made and the vaccine injected; as soon as the ferments had been produced in sufficient quantity, the infection was overcome and the patient recovered. Such simple technique was effective in relatively few diseases, but one must conclude that all other infections belonged to the first class; by far the great majority should be placed in the subvariety of the second class. Although they might react with little or no benefit to the mere injection of the vaccines, careful examination of other factors would reveal that with accessory methods of treatment positive results might be obtained.

PROFESSOR VICTOR C. VAUGHAN of Ann Arbor, Mich., said that he and Dr. Wheeler had hit upon a method of splitting up bacterial proteins to get the poisonous and the non-poisonous portion. The poison was not destroyed by alcoholic solutions of potash 1/10 to 2/10 of one percent. They had tried this and were able to split up colon, typhoid, and other pathogenic bacilli into poisonous and non-poisonous groups; they then tried the non-pathogenic organisms and found the same thing. The bacterium which produced the largest amount of protein poison was the B. prodigiosus. In round numbers it gave one hundred times as much poison per milligram as the anthrax bacillus. The conclusion

they reached from this was that the infectious character of anthrax was not due to the poison it liberated but to the capacity of the anthrax bacillus growing in the tissues. They tried animal proteins, serum albumin. They also found poison in vegetable proteins and as a matter of routine tested the non-poisonous parts and to their surprise these gave at least a certain degree of immunity to the living germ. They had split edestin, which many claimed was a pure protein body, and got the poisonous constituent out of it. They went over a great many proteins and made the statement, subject to revision after more extended research, that all proteins contained a poisonous group. Of all the papers on experimental work produced within the last few years there were only two which appeared to be contradictory to this theory, one by Auer and Van Slyke and one by Gibson, published in the *Philippine Journal of Science*. The work of White, Avery, and Wells seemed to point to the fact that the protein molecule did contain sensitizing groups. The Abderhalden test was a support to the theory of bacterial ferments and it was a biological law that when a living cell was stimulated by a foreign protein it tended to produce a ferment which digested that protein. If this were a law, further investigation might render protein sensitization of value in the prevention and treatment of disease. Every cell in the animal body must produce its own specific ferment, it could not receive and utilize its food in any other way. If one could educate the cell to produce a ferment which it had not produced, and he believed they did this with typhoid vaccination, the most reasonable explanation was that the body cells learned to digest typhoid bacilli. Dr. Vaughan said that he regarded the carcinomatous cell as a cell so modified that it produced specific ferments. The work done by J. W. Vaughan on cancer fitted in with this theory. He sensitized animals with cancer residue or the whole cancer cell. This led to an increase in the large mononuclear cells in which a ferment was found which when injected directly into cancerous tissue produced in the patient all the symptoms of anaphylactic shock. He had experimented with this ferment and was inclined to say at present that the poison in its purest form was not a protein, whether it was the histamine of Barger and Dale or some closely related substance, he did not know. He had made a great many experiments with the non-poisonous part of the tubercle bacillus and while he was not ready to publish his experiments, thought he might say that the non-poisonous part of the tubercle bacillus did not protect guinea pigs in any way from inoculation with tubercle bacilli. He thought it was harmful, for those treated died quicker than the others that were not so treated. In a great many guinea pigs, in the later stages of tuberculosis, he had injected the non-poisonous part and within one-half hour the temperature began to fall and continued to fall for two or three hours. This hastened the splitting of the tubercle bacilli. With rabbits the non-poisonous part apparently emphasized the resistance to the tubercle bacillus, but rabbits were irregular in their reaction toward the tubercle bacillus so they could not draw any conclusions. The non-poisonous portion of the tubercle bacillus was not harmful if given to rabbits intravenously.

Blood Platelets and Immunity. DR. GERALD B. WEBB of Colorado Springs, Col., presented this paper. He reviewed the history of blood platelets and showed that they probably contained or supplied opsonin. Blood platelets were found to be increased by an altitude of 6000 feet, also by hyperemia of the marrow, and in carbon monoxide poisoning. Blood platelets were always increased in tuberculosis. The author found them increased in measles during the attack. They were found increased in pellagra. Preliminary experiments suggested the possibility that the blood platelets could sensitize tubercle bacilli.

The Influence of Vaccine Therapy on Blood Morphology. DR. FREDERICK E. SONDERN of New York City said that the cause of vaccine therapy might be furthered by observing the relation between the administration of vaccines and the leucocyte count, the differential count, and the exact degree of existing anemia. No work had yet been done with this point particularly in view. On those acute general infections in which vaccine therapy had been supposed to be of benefit, blood examinations had shown hyperleucocytosis with a decreased polynucleosis. Even fatal cases showed a slight improvement in the blood picture with the use of vaccines. In reviewing the subject of vaccine therapy in acute general infections, it was necesary to state that while it had met with some success in practice, it was still open to question from a theoretical standpoint and should be considered as purely experimental. Autogenous bacterial vaccines had proved of value in cases of localized chronic infection. These were now used without the determination of the opsonic index. Further investigation should be given to those cases in which vaccine therapy was not successful. The successful use of vaccine therapy in chronic local suppurative processes seemed to cause an increased leucocyte count, a decrease in the relative lymphocytosis, and improvement in the anemia. In cases aggravated by vaccine treatment the leucocyte count was lower than before treatment, the relative lymphocytosis is more marked, and the anemia increased. Further investigation was necessary to determine whether those blood changes were constant, and whether they might be taken as an index of the utility of vaccine therapy.

DR. WILLIAM EGBERT ROBERTSON of Philadelphia, Pa., said that he had been interested in the clinical phase of chills in typhoid fever. The chill seemed to have a beneficial effect and was usually followed by a lower temperature, going to normal in a few hours and gradually rising again. Usually convalescence occurred. In the course of typhoid fever there was a very distinct lowering of the polymorphonuclears with relatively greater increase in the lymphocytes. Giving the bacterins in large doses, when it was possible to make a clinical impress on the case, gave the same results, seeming to indicate that the cause of the chill was essentially acute bacteriolysis.

Vaccine in Relation to Mouth Infection. DR. JOSEPH HEAD of Philadelphia, Pa., read this paper, in which he contended that the treatment of mouth infections should include the removal of all infecting masses by local surgical treatment, and application of mouth washes, and a more or less extensive treatment with vaccines. As mouth washes a one per cent. solution of hydrogen peroxide made slightly alkaline, or sodium silico fluoride in aqueous solution of a strength of 0.61 per cent. might be recommended. Their effect, since they were not germicidal, might possibly be due to a sensitization of the bacteria, thus allowing a more effective action of the body ferments. In connection with local treatment the vaccines gave excellent results. A

stock vaccine was used containing the bacteria most frequently found in forty-two cases examined. The writer gave the technique for removing material from infected pockets for the preparation of an autogenous vaccine. The course of the treatment should be regulated with great care, according to the presence or absence of reaction. The blood count was of interest and might prove of value as a guide to dosage. The writer reported cases which showed the value of vaccine treatment in mouth infections.

Complement Fixation Tests in Infective Deforming Arthritis and Arthritis Deformans: DR. T. W. HASTINGS of New York City presented this communication in which he described the method by which the complement fixation test was applied to cases of infective deforming arthritis and arthritis deformans in order to determine, if possible, the etiological factor of the disease. The antigens used included various strains of streptococci, other organisms isolated from cases of arthritis, and polyvalent gonococcus antigens. A Wassermann test was made in every case. Of 43 cases of arthritis, 25 of deforming arthritis have positive complement fixation and positive Wassermann tests; 19 cases of arthritis deformans gave positive tests, 17 reacting positively to streptococcus viridans, and four to a polyvalent gonococcus antigen. The 26 control cases, not arthritis, were with very few exceptions negative to complement fixation tests for streptococcus viridans. The results indicated that the streptococcus viridans was the probably causative agent in many cases of arthritis deformans. About 40% of cases of arthritis deformans should be considered as chronic infective deforming arthritis. The clinical manifestations of this condition were rarely due to gonococcus infections. When a positive reaction occurred with both a streptococcus and a gonococcus antigen, the reaction to the former should be considered the indicator of the causative agent, as there was often a latent infection with the latter in the genito-urinary tract.

Comparative Wassermann, Cobra, and Globulin Tests in Syphilis, with Report of One Hundred and Five Cases. DR. WILLARD J. STONE of Toledo, Ohio, presented this paper. He outlined in detail the technique of the cobra venom test and of Noguchi's butyric acid test for increased globulin, and stated that the comparative work upon the Wassermann and cobra venom reactions in syphilis had given very similar results. Of 105 cases examined by the author there was marked uniformity in these tests. There were some differences in outcome, but the discrepancies were not great. The result of the globulin test differed from the other two reactions in a larger percentage of cases.

DR. JOHN A. KOLMER of Philadelphia, Pa., said that in a certain percentage of cases the cobra venom test was slightly more delicate than the Wassermann reaction, but not when active serum was used. They had been using antigens reinforced by the addition of pure cholesterin for the Wassermann reaction and had not been able to convince themselves that the cobra venom test was as delicate as the Wassermann test thus reinforced. Cholesterin antigens were possibly hypersusceptible and required close controls. Since using cholesterin antigen they had found correct positive results in tertiary syphilis in a larger percentage of cases than with the venom test, though he believed that the venom test did have a distinct value in the diagnosis of lues in certain stages. In the primary stage hypersensitiveness of the red blood cells rendered the venom test of little value in the diagnosis of syphilis.

DR. RICHARD WEIL of New York City said that the observations of Kobar showed that, in addition to the production of antihemolysis when venom was injected into animals, there was also a change in the red blood cells. He had tested a considerable number of hemolysins in order to see whether under any other conditions similar resistance developed on the part of body cells. It was found that the red blood cells of luetic individuals showed an increased resistance to cobra venom. In regard to the constancy of this fact on which its value as a diagnostic measure depended, they had not made a sufficient number of tests to show anything definite. Others seemed to have established the fact that it was fairly characteristic. While under given conditions the speaker believed that the cobra venom test might not compare equally with the Wassermann reaction, it would in a number of cases show positive results in luetic cases in which the Wassermann would be negative. It was certainly true that the Wassermann showed a considerably larger percentage in the total of positives.

DR. JOHN A. KOLMER of Philadelphia, Pa., said that he also wished to make the point that the protein reaction in cerebrospinal fluid also fell far short of the Wassermann reaction in the diagnosis of syphilis of the cerebrospinal system. The globulin test was uniformly positive in various types of inflammation of the spinal meninges. Hence they used the globulin test to differentiate tuberculous meningitis from the so-called serous meningitis or meningismus. In the latter the protein reaction was uniformly negative, whereas in tuberculous meningitis it was uniformly positive.

A Note on the Preparation of Bacterial Vaccines. DR. WILLARD J. STONE of Toledo, Ohio, read this paper. He stated that some of the reactions following the administration of bacterial vaccines were due to the presence of extraneous proteins, derived either from the culture media or the soluble excretory products of the bacteria. To do away with extraneous proteins all bacterial suspensions used in the preparation of vaccines, with the exception of such fragile organisms as the gonococcus and pneumococcus, were washed with a high speed centrifuge until the supernatant salt solution no longer gave the biuret reaction. In standardizing the vaccines a suspension of living washed organisms was used and Dr. Spooner's method of counting employed.

DR. A PARKER HITCHENS of Glenolden, Pa., said that the effect of pepto-toxins present in bacterial vaccines was relatively slight because the quantity was very small. When injecting large animals for the preparation of antibacterial sera, enormous doses of the germs were administered and in such cases they saw the possibilities of pepto-toxin. Formerly when it was the practice to inject unwashed batteria they were compelled to use as a maximum dose a quantity less than 1/1000 the amount that they could now use; since they washed the bacteria even with very large doses, symptoms of anaphylaxis were not observed.

DR. JOHN REICHEL of Glenolden, Pa., related that in attempting to immunize cattle against contagious abortion with suspensions of dead bacilli of contagious abortion they had observed that when unwashed bacilli were injected intravenously, severe and unusual symptoms followed almost immediately.

It was subsequently shown that these symptoms were due to peptotoxin. They had also precipitated peptotoxin with absolute alcohol, and it was shown that the substance remained unchanged after boiling, and that it could be kept almost indefinitely.

DR. JOHN A. KOLMER of Philadelphia, Pa., said that it had been their custom to wash vaccines grown on ascitic agar or blood agar, but not those that were made with organisms that would grow on ordinary nutrient agar. Dr. Kolmer also emphasized the necessity, in counting the bacteria with a counting chamber, of carefully filtering the dye before it was put into the chamber.

DR. WILLARD J. STONE of Toledo, Ohio, said it was necessary to wash all bacterial suspensions grown upon nutrient agar. They had found that such suspensions would give a very marked biuret test after centrifugation. All agar-grown bacteria in salt solution suspensions would give nearly as strong a biuret test at suspensions of bacteria grown upon serum or in bouillon.

Autoserotherapy, also the Therapeutic use of Inactivated Pus and the Value of Tuberculins in Serous Cavities. DR. WILLIAM EGBERT ROBERTSON of Philadelphia, Pa., read this paper in which he gave an extensive review of the work in autoserotherapy from the time of its introduction to the present. As applied to pleural effusions of the serous or serofibrinous type it had proven of value in proportion to the incipiency of the tuberculous lesion. The injection of old tuberculin following the fractional withdrawal of fluids from the pleural cavity had given excellent results, especially in cases of long standing. Similar use of bacillary emulsion had proven less satisfactory. The reinjection of inactivated purulent exudates possessed some therapeutic value, although in general the results had not been uniform. Though inactivation destroyed the infectivity of the exudate, it was not necessarily sterile, so that it might possess the properties of a bacterin and also of a leucocyte extract.

DR. G. MORTON ILLMAN of Philadelphia, Pa., said he had had the opportunity of seeing many of these cases Dr. Robertson had reported from the clinical standpoint, and had been struck with the marked regularity of the results. There was through the entire series much that was encouraging in their bacterin work. In the very beginning of their work with bacterial vaccines in America they had issued a warning against the promiscuous use of bacterins and other toxic products and they were beginning to recognize that the things they had feared from the toxic effects of bacterins were coming to pass. Throughout this meeting thus far one thing stood out clearly and that was that the cellular living tissues did react to the call for the production of digestive ferments to any one of a dozen active infectious agents or their products. He believed Dr. Vaughan's hypothesis was a reasonable fact.

The Experimental Basis of Tuberculin Therapy. DR. GEORGE BURTON GILBERT of Colorado Springs, Col., presented this paper in which he reviewed the work done with tuberculin and stated that it was evident that a sound experimental basis for the use of tuberculin had not yet been found. The writer described his experiments with two series of guinea pigs and concluded that the results of the work indicated that the tuberculin treatment as given neither cured nor checked the course of the disease to any important extent.

Tuberculin Therapy: Its Present Imperfections and Future Improvements. DR. F. M. POTTENGER of Monrovia, Cal., read this paper. He declared that the fact that tuberculin had not succeeded in producing immunity was not an indication that it did not cause healing, for definite focal stimulation and healing had been seen to follow the administration of a tuberculin which had failed to produce a high degree of experimental immunity. Many of the faults ascribed to tuberculin were due to lack of skill in administration. Its value could not be estimated from the results obtained from its use upon experimental animals as the natural resistance of such animals was not comparable to that of human beings. Progress in tuberculin therapy depended upon an improvement in both the laboratory production and the clinical application. Work should be done in the laboratory in determining more exactly the constituents of the various tuberculins and in producing tuberculins of a definite standard.

DR. GERALD B. WEBB of Colorado Springs, Col., said he did not think anyone could work in Wright's Clinic and not be impressed that tuberculin did some good. In tuberculin therapy it seemed that they had an instance in which it did not seem possible completely to prove the therapeutic value by animal experimentation.

DR. JOHN REICHEL of Glenolden, Pa., said that the Laboratory of the Pennsylvania State Livestock Sanitary Board was in possession of two cultures of tubercle bacilli, one of the human type without virulence for experimental animals, and another, a bovine culture, which was highly virulent for experimental animals and for cattle. Tuberculins prepared with each of the two strains proved equally satisfactory in the tuberculin test of infected cattle. This would tend to show that tuberculins were not likely to vary so far as virulence was concerned, since the reactions with each of the strains was equally strong.

DR. JACOB BRONFEN BRENNER of Pittsburgh, Pa., called attention to the fact that inherent properties of different cultures of tubercle bacilli might be responsible to a certain extent for discrepancies in the results obtained by different investigators, as it was well known that pathogenic organisms were very apt to change their biological properties when cultivated on artificial media. Indeed it seemed that the greater the difficulty with which the organism adapted itself to the artificial media, the more radical the changes it underwent when once cultivated. The reason for this seemed to be that in such cases the organism must markedly change its metabolism in the process of adaptation to the medium, if it was to become at all adapted. The tubercle bacilli seemed to be a striking exception to this rule as the oldest strains seemed to retain their pathogenicity. The speaker said he had been working with the tubercle bacilli cultivated by Professor Besredka and he entertained the hope that this new tuberculin might be very useful in diagnosis of tuberculosis as well as for treatment of the disease. In his diagnostic work he had obtained 98% of positive results in different cases of tuberculosis and only 8% of positive results among non-tuberculous subjects. It was quite apparent that in many ways the tubercle bacilli of Besredka had acquired distinct properties. It seems quite important that those who reported favorable on their experiments of tuberculin therapy should give as completely as possible the history of the tubercle

bacilli used and the minutest details of their preparation.

DR. F. M. POTTENGER of Monrovia, Cal., said that he wished to make his attitude toward the laboratory clear. He who studied the disease exclusively would fail and likewise he who devoted his attention entirely to the patient; but by recognizing that both must be treated the greatest success would be attained. There was quite a difference between experimental tuberculosis and tuberculosis as they knew it clinically. With reference to the treatment of tuberculosis with tuberculin, one of the most important principles to remember was that the administration of this remedy was an individual matter. A large dose for one patient and for one pathological condition was a small dose for another, and a dose might be exceedingly large if the patient had not been perpared for it, and yet be a small one when this tolerance had been established. Small doses given infrequently increased the patient's sensibility, while large doses given at the right time decreased hypersensitiveness and increased the patient's tolerance, but it must be remembered that large and small were purely relative matters.

Presidential Address. DR. GERALD B. WEBB of Colorado Springs, Col., made this address, taking as his subject, "The History of Immunity." After dwelling on the life and work of Jenner and Pasteur, the speaker said that they were naturally proud to have with them in this country the one who took the next step forward as an immunologist, Theobald Smith, who showed, in 1886, that immunity from hog cholera could be produced by the innoculation of bacterial products. In 1890 came the discoveries of Behring and Kitasato on tetanus and diphtheria, and their anti-toxins for these diseases which found ready acceptance with the profession. Koch, with his products of dead tubercle bacilli was the first to treat disease with what later became Wright's conception of vaccines. Disastrous results followed Koch's experiments, but it was otherwise with Wright who might undoubtedly be regarded as the founder of vaccine therapy. In his own words, "The fundamental principle of vaccine therapy, as I conceive it, is to exploit in the interest of the infected tissues the unexercised immunizing capacities of the uninfected tissues." After paying a fitting tribute to the work of Wright, the speaker said that after eight years' experience with vaccine therapy, and with the passing of the early enthusiasm, it was well to review briefly its present status. Ehrlich, fresh from his recent triumphs in immunology, expected that within the next five years advances in chemotherapy might lead to successful treatment of bacterial diseases in a manner similar to his cure of spirilla infections. Until the predicted discoveries might be made, Wright's vaccine treatment and the improvements which were rapidly developing seemed to be the best treatment at hand. Time had shown that the method was of undoubted value in infections due to many bacteria. On the whole they had to record more failures than successes. One could not but feel, however, that many of the failures must be due to the inability of the protective substance to reach the foci of infection. This had been especially urged by Wright and more recently by Hitchens. The brilliant work of Vaughan, the American pioneer in immunology, seemed destined to aid them greatly. The elimination of the toxic group of the protein molecule had already borne fruit, and the gratifying results of Rosenow, in his employment of autolyzed products of the pneumococcus in pneumonia, seemed to affirm his theory. It was yet too early to know how much better would be the employment of sensitized bacterins, but the theory of their usage was sound. Drug houses were trying to influence the profession, by broadcast advertising this time, to use dangerous and uncertain remedies to be inoculated in bacterial infections. Members of the Wright school could not too severely condemn the wide-spread use of the so-called phylacogens. Dr. Webb then referred to the work of Flexner, Swift and Ellis, and, in conclusion said he largely agreed with Wright that the physician of the future would be an immunologist, and he would also add, a hygienist. The hygienist and the immunologist must work closely together and Pasteur's prophecy, that it was within the power of man to rid the world of infectious diseases, would be eventually fulfilled.

The Relation of Parenteral Digestion to Immunity. PROFESSOR VICTOR C. VAUGHAN of Ann Arbor, Mich., made this address in which he stated that cells were composed of protein and required protein for their metabolic processes. The protein molecule as such was of no value, that was, digestion must take place before absorption or utilization could occur. In enteral digestion the cleavage was normally complete. Toxic products were further degraded as fast as they were formed. In parenteral digestion an analogous cleavage occurred but the toxic products were carried throughout the organism before further splitting could convert them into simpler non-toxic fragments. All cells were provided with the necessary mechanism to insure a degree of cleavage. This power resided in the ferments elaborated by the cell. Not every cell could utilize the same fraction of the protein complex. Therefore a selective action was manifested, each type of cell producing a definite type of ferment capable of acting upon the material supplied in such a way that it could become incorporated into the cell body. This conclusion reached by reasoning had been demonstrated by experiment upon digestion in unicellular organisms, in bacteria, and in leucocytic digestion. As a defense against foreign protein, as, for instance, invading bacteria, cells elaborated two kinds of ferments, group and specific. The group ferments were normally present in the blood and tissues of all animals. They were, within limits, general proteolytic ferments, but differed in kind, in amount, and in efficiency. Specific ferments were called forth on direct response to the introduction of a foreign protein and were capable of degrading that protein only. The production and presence of these general and specific proteolytic ferments had a very important bearing upon the phenomena of immunity.

DR. JACOB BRONFEN BRENNER of Pittsburgh, Pa., said he would like to know whether a substance like tetanus toxin, for instance, was considered primarily toxic or simply so easily digested by ferments that the toxicity did not require any incubation period to show itself.

DR. VICTOR C. VAUGHAN of Ann Arbor, Mich., replied that of course the word "toxin" had taken on a specific meaning. Toxin was a substance which produced an antibody when injected into animals. It might be said that all toxins were poisons but not all poisons were toxins. The protein poison was not a toxin; it did not produce any

antibody. Whether the toxins were ferments or not, Dr. Vaughan said he could not say. If it could be proved that the toxins were ferments the whole subject would be cleared up. Abderhalden had shown by his optical method that the toxins did split up proteins. That was as far as they had gone. The most rational explanation was that when diphtheria toxin got into a child's body or when it was injected into a guinea pig it split up the protein of the body and set the protein poison free. It was the protein poison that killed. He did not say that this had been demonstrated, but toxins certainly were closely related to the ferments. They acted in very small amounts, in high dilution, and they were destroyed by high temperatures. The toxin would act in dilutions so great that they did not give the biuret test. That was a still further indication that it was a ferment. Dr. Vaughan said he had an antipathy to calling these ferments anti-bodies; one might as well call pepsin anti-meat, because it digested meat.

DR. JAMES W. JOBLING of Nashville, Tenn., said that Dr. Vaughan had left little to be said. Dr. Vaughan had first aroused his interest in this subject and caused Shrouse and himself to study the cleavage products of proteins when acted upon by the leucoprotease of human leucocytes. They were able to obtain toxic substances in this manner and by fractionating the products, they found that the toxins were present in the protease fraction. They were unable to say whether there were actually primary proteases, or merely substances which were carried down mechanically with this fraction, though the ease with which they might be made non-toxic by the further action of trypsin and leucoprotease indicated that they were primary proteases. They had been inquiring into the methods used by the body in preventing the formation of these toxic substances and had found that the antitryptic action of the serum was due to the unsaturated fatty acid radicals of the lipoids. These lipoids mught be extracted by chloroform and when the chloroform extract was properly treated the antiferments might be obtained almost quantitatively. The serum treated with an excess of chloroform lost entirely its antitryptic action and it also lost its activity if treated with an oxidizing agent as iodine. Guinea pig serum from which the antiferment had been removed became toxic for other animals of the same species, and this applied to all sera which they had tested. In the course of their work they had observed that bacteria, kaolin, and other substances would remove the antiferments from the serum and render it toxic. This was important in view of the work done with the so-called anaphylotoxins, and also suggested the possibility of there being a true auto-intoxication due to local or generalized absorption of antitrypsin. It was also possible that some of the metabolic disturbances leading to cirrhosis of the organs, etc., might have their origin in a disturbed ferment.

When Dr. Vaughan stated "that live bacteria ingested proteins," did he mean that the bacteria took up and assimilated native proteins, or did he use the term in a more general sense and include the lower cleavage products?

DR. VICTOR C. VAUGHAN replied that he did not believe that any cell took a protein and absorbed it as a whole, but it might absorb it without splitting it far enough to liberate the poisonous group. He thought they could claim pretty good evidence that no cell could take a foreign protein and build it directly into its body. Dr. Vaughan also discussed the relation between the antitrypsin and the trypsin of the blood. Here lay a most important field of investigation. The balance between the proteins present in the blood and the proteolytic ferments must be something which was capable of the nicest kind of adjustment. From what he had said one could readily see that while he believed that the ferments of the body destroyed the invading organism, life might be saved by an abundance of the antibody preventing the too rapid action of the substance which was destroying the bacteria.

Demonstration of a Simple Method of Making Cultures from Tissues, and Its Application in Arthritis Deformans. DR. EDWARD C. ROSENOW of Chicago., Ill., presented this paper in which he stated that up to the present time there had been no systematic bacteriological examination of the tissues of the body during infection. The author had devised an apparatus which was efficient for this purpose and which he described fully. In preparing cultures from tissue emulsions, it was advisable to plant the emulsion deep in rather tall tubes of ascitic dextrose agar. With this method of planting there were afforded all the gradations between aerobic and anaerobic conditions, and growth was obtained from organisms ordinarily hard to cultivate. The method described had proven particularly successful in cultivating cases of arthritis deformans. Streptococci, staphylococci, and organisms resembling Bacillus mucosus and B. welcheii had been isolated from 54 cases. Cultures made from the joint and also from the lymph gland draining the joint had frequently yielded the same organism. This fact would be of service in studying arthritis deformans. It would be of interest to discover how this microorganism acted upon the body to produce this form of disease.

DR. VICTOR C. VAUGHAN of Ann Arbor, Mich., said he had followed Dr. Rosenow's work and believed it to be of the greatest importance scientifically and practically.

The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength. DR. HANSON S. OGILVIE of New York City read this paper. He stated that in order to reach the diseased areas in syphilis of the central nervous system, intraspinal treatment as introduced by Swift and Ellis was strongly recommended. The author based his preparation of salvarsanized serum upon the method of Swift and Ellis, but he prepared his serum by adding salvarsan and subsequently heating *in vitro* so that the strength of the curative agent might be regulated. Thus he obtained a serum of known salvarsan content. With a carefully perfected technique of preparation and administration of the serum there was little danger of severe reaction. In fifty percent. of the treatments there was no reaction of any kind beyond a slight temporary weakness. It was important that the dosage should be small—within 1.0 mg. The results of the cases studied demonstrated that the laboratory evidences of active syphilis, as shown by the Wassermann reaction, in both the blood and spinal fluid and the cell count and globulin content, were reduced to a greater or less degree in every instance. In the majority of cases there was marked clinical improvement. The method was of interest because it furnshed the means of giving salvarsan in small doses intraspinally without danger to the patient.

Book Reviews.

Metabolism in the Exudative Diathesis. By ALBERT NIEMANN, M.D., Berlin. Bonn: Marcus and Webers. 1914.

This monograph presents the results of a clinical and laboratory experimental investigation on metabolism, based on a study of three children with supposed exudative diathesis. The author concludes that in every case there was a notable increase of heat formation and that in two the carbon dioxide production was exalted. He believes that the nature of the exudative diathesis rests on a disturbance of metabolism, which he has for the first time demonstrated. The work, which is chiefly of interest to experts, is illustrated by twenty-eight tables and five graphic charts. It is a typical piece of Teutonic investigation.

The Prophylaxis of Malaria, with Special Reference to the Military Service. By CHARLES F. CRAIG, M.D. Washington: Government Printing Office. 1914.

This bulletin (No. 6) from the office of the Surgeon-General of the War Department, presents an excellent laboratory and field study on the prevention of malaria by screening and by mosquito extermination. It is admirably illustrated with five charts, twelve full page plates and three figures in the text; and there is an excellent terminal bibliography of seventy titles. The work represents one of the important departments of activity of the army medical service and is a valuable contribution to the literature and knowedge of the subject.

Transactions of the National Association for the Study of Pellagra. Second Triennial Meeting, Columbia, S. C. The R. L. Bryan Company. 1914.

This belated volume records the proceedings of the second triennial meeting of the National Association for the Study of Pellagra in the fall of 1912. These consist of a series of papers by various international experts, conveniently grouped under headings of etiology, epidemiology, local history, diagnosis, laboratory investigations, clinical features, treatment and miscellaneous aspects. Not all the papers read at the meeting are here presented owing to interference with return of proof by the European War. There are several charts and maps illustrating the distribution of the disease in this country. The third triennial meeting of the Association is to be held next summer at a place not yet selected.

Public Health Laboratory Work. By HENRY R. KENWOOD. Third Edition. New York: Paul B. Hoeber. 1914.

The subject matter of this book is considerably more limited in its nature than the title would imply, since it deals almost exclusively with the chemical side of public health laboratory work. The bacteriological side of the subject is given but passing notice. An introductory note describes and gives directions for the use of chemical apparatus used in health laboratories.

The subjects considered are the examination of water, sewage, soil, air, food and disinfectants. The various processes are described in an exceptionally clear and concise manner, and are accompanied by sufficient theoretic discussion to make their use intelligible. It would be well if more distinction were made between the tests commonly used as a routine and those of less important or only occasional use. This work, like many of foreign authorship, is handicapped from the fact that many of the methods are not those usually employed in this country.

The Heart in Early Life. By G. A. SUTHERLAND, M.D., F.R.C.P., Senior Physician to the Hampstead and Northwest London Hospital, Physician to Paddington Green Children's Hospital. London: Henry Frowde and Hodder and Stoughton. 1914.

Dr. Sutherland in this admirable little book in the series of Oxford Medical Publications, emphasizes the importance of polygraph tracings in the diagnosis of cardiac conditions in childhood. He calls attention to the frequency of irregularities of the pulse in childhood, explains the various types and emphasizes the facts that they are not signs of heart disease and do not require treatment. He also calls attention to the frequency of murmurs "about the heart" in childhood and that they do not mean organic disease. He describes three types,—the pulmonary systolic, the cardio-pulmonary and the systolic murmur of cardiac debility. He calls especial attention to the frequency of subjective symptoms pointing to the heart in children, which are really manifestations of a neurasthenic state, and to the absence of subjective symptoms when there is disease of the heart. He notes the frequency and relative unimportance of acute dilatation of the heart in childhood. He attributes this to the fact that the tonicity of the heart muscle is not as well developed in childhood as in later life. The chapters on valvular murmurs and on treatment are remarkably good and full of common sense. The whole book shows that the author is thoroughly familiar with heart disease, and its peculiar manifestations in childhood. It will well repay everyone, whether a pediatrician or not, to read this little book most carefully.

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TYPHOID FEVER IN THE CITIES AND TOWNS OF NEW YORK DURING THE LAST DECADE, AND DISINFECTION BY CHLORINATION OF PUBLIC WATER SUPPLIES IN THE STATE.

CONTAMINATED water being the chief of the many agenices by which typhoid is spread, improvement in the character of public water supplies naturally constitutes one of the most important factors in successfully combating the disease, and is a matter of vital interest in every community. In the latest issue of *Health News*, the monthly bulletin of the New York State Department of Health, there is presented a series of curves which show in graphic form, like the elevations and depressions of a temperature chart, the prevalence of typhoid fever in the cities and towns of over ten thousand inhabitants in the state, from 1904 to 1914, inclusive. From this showing it is seen that fifteen of the forty-five cities and smaller places have a record of typhoid rates almost uniformly below 20 per 100,000 for the whole period of eleven years, and it is found that in this, which may be called list of honor, are included all the first and second class cities, except Troy, and six cities of the third class. Eleven other of the communities have had generally satisfactory typhoid rates in recent years, but either high rates during the early part of the period in question or occasional epidemics during its course; and all but one show rates under 20 per 100,000 for the year 1914. In the case of Auburn, Elmira, Poughkeepsie, Rensselaer and Rome, which are on this list, and of Cohoes and Elmira, which are not charted like the rest, it is stated that the more recent decrease in the typhoid death-rate was definitely associated with improvements in the public water supply. The remaining seventeen cities and villages, among which Troy is included, show more or less consistently high typhoid rates; but, taking the year 1914 alone, Fulton, Kingston, Little Falls, Middletown, Plattsburg and Lockport should be removed from this last list, and in the case of Lockport the reduction in typhoid was directly due to chlorination of the public water supply. In this connection it is noted that Ithaca, Newburgh, North Tonawanda and Oswego have recently taken steps to have their supplies purified by the same method. In the year 1914 the six highest typhoid death-rates in the state were, 61 at North Tonawanda, 41 at Dunkirk, 34 at Troy and Corning, and 33 at Hudson and Watervliet, and in each one of these instances, with the possible exception of Troy, the public water supply is known to have been subject to serious contamination. In well-protected communities typhoid fever rates are now falling rapidly to 10 per 100,000, or below; so that if any city or town has a rate of 20, or over, there is urgent need that serious attention should be given to its water supply and other local sanitary conditions.

In the same issue of *Health News* is published a paper on the disinfection of public water supplies by chlorination, by Theodore Horton, director of the division of sanitary engineering in the State Health Department. He points out, that while the first practical demonstration of the value of hypochlorite of lime for disinfecting large volumes of water was made in England, almost simultaneously, investigations, which were being prosecuted at the Massachusetts Institute of Technology, attested the utility of this means of disinfection. The first public water supply in this country to be treated by the hypochlo-

rite was that of Jersey City, in 1908, and since then such disinfection has had a remarkable growth, so that today we find chlorination plants in very general use. He remarks, however, that, valuable as the discovery of this method has proved to be in the protection of human life, it is not to be regarded as a panacea for water supply troubles; nor is its practical application always a simple matter. On the contrary, there are some classes of waters which do not lend themselves readily to effective chlorine treatment, and in treating those which do, many difficulties have had to be overcome. In the past two years many improvements have been made in chlorination plants and processes, and the most important of these is the substitution of chlorine gas for hypochlorite of lime. When we consider that chlorine is just as effective as the latter, one can readily understand how, if the gas can be applied directly to the water, the method of treatment may be simplified. This has now been done, and there are upon the market a number of devices for applying chlorine gas which, while somewhat complex in their mechanical working, are durable in material and construction and quite positive in operation.

Up to the present time—and until its efficiency had been clearly demonstrated—the disinfection of water supplies by chlorine has been largely limited to the treatment of water which has first been passed through sand filters. Unfortunately, there are many supplies which are subject to continuous sewage contamination, and hence unsafe, where the municipalities or companies are financially unable at once to meet the expense of sand filter plants. When, therefore, one considers that the cost of a chlorination plant is only a very small fraction of that of such a filter plant, and that the cost of the minute quantity of chlorine required to disinfect the water is almost negligible, there would appear to be no plausible excuse now for any municipality or water company to furnish a community with unsafe water. It is not to be expected that a chlorination plant will make a roily, colored or otherwise physically objectionable water attractive, but, when properly installed and operated, it can be relied upon to destroy disease bacteria, and thus to safeguard the people against water-borne diseases and epidemics. In the state of New York at the present time practically all the larger and many of the smaller water filtration plants are equipped with chlorination apparatus for disinfecting the final effluents from the filters. In addition to these there are many municipalities, including New York City and Buffalo and various smaller cities and towns, where the water supply is not filtered, but where a chlorination plant is installed and the water disinfected before use. In the paper are cited two striking examples of the efficacy of chlorine treatment for the protection of life and health, illustrating the value of this method in cases of emergency; the places referred to being the cities of Lockport and North Tonowanda, both of which take their water supply from the Niagara River a few miles below Buffalo, which pours its raw sewage into the river.

FEEBLE-MINDEDNESS IN MASSACHUSETTS.

THERE is at present pending before the Massachusetts General Court a bill providing for a third institution for the care of the feeble-minded in this Commonwealth. In this connection there is particular pertinence in a statement recently published relative to the number of feeble-minded in Massachusetts.

In 1912 the State Board of Insanity made a census through correspondence and field work, by means of which 5000 cases of feeble-mindedness were reported outside the state institutions. In 21 towns, however, in which more careful investigation was made, nearly three times as many cases had been found as had been reported through correspondence. On this basis it is estimated that there are probably from 10,000 to 14,000 in this state uncared for by any institution. Beside this approximate number of feeble-minded at large, there were in last October 2664 cases receiving institution care. The hospitals at Waverley and Wrentham are entirely inadequate to provide for so large a number of inmates. They are now accommodating over 8% more than their capacity, and there is a waiting list of 1310 cases for the two institutions. Moreover, a disproportionate number of cases are drawn from Eastern Massachusetts, while the western portion of the state contains relatively as large a number of those needing institution care.

The menace to the state and to local communities by such lack of adequate provision for care of the feeble-minded is obvious. Moreover, to leave these individuals at large makes it impossible to prevent their rapid increase in numbers.

The cost of maintaining the feeble-minded in institutions is far less than the loss involved by leaving them in their homes.

"Directly or indirectly the burden of support for the feeble-minded must devolve largely on the public. The problem is, therefore, where they can be taken care of with greatest advantage to themselves and the community. If they are permitted to remain at large they jeopardize the efficiency of our public schools and other agencies designed for the training of normal children and inevitably lower the moral tone of the community in which they live. They cannot be taught by ordinary methods. Special classes can handle relatively few of them and meet their needs only to a limited degree. Totally misunderstood by the average teacher, on whom their presence puts an unjust strain and anxiety, they are an idle and degrading element in the schools. The resulting truancy, delinquency, immorality, and crime entail a heavier expense on the state than would be required to provide adequate institutional care.

"On the other hand, most of the feeble-minded are capable of some industrial training and may become wholly or partially self-supporting. Thus from demoralizing and destructive agents a wise care and education will transform many into productive members of society. When this is accomplished it may even be possible for some to return to the community if they can be carefully safeguarded against the possibility of injury to themselves or others. But in any case institutional care is an imperative necessity during these years of preliminary training and during the dangerous periods of adolescence and early maturity.

"State schools especially planned and adapted to the needs of the feeble-minded afford the only means we have of dealing with this class which meets the demands of economy, efficiency, and justice. Ignoring, however, the injustice of a policy which treats the normal and the feeble-minded alike, economy alone requires that the feeble-minded be maintained in separate institutions rather than in the regular correctional schools of the state."

On the whole, segregation of the feeble-minded in state schools is an economy, grievous as the financial burden at the time may be. Statistics show that the state of Massachusetts is now employing 36% of all its revenue for charity, a total expenditure of $6,839,093.59. Yet of all this only 9.4% was spent for the feeble-minded and 50% for those actually insane. This seems a disproportionate amount in view of the inadequacy of present provision for the feeble-minded and the seriousness of the menace which their presence at large in the community constitutes.

The above facts seem to present a conservative statement of the conditions relating to feeble-mindedness in Massachusetts and therefore deserve serious consideration by physicians and by legislators with reference to the present bill now pending before the legislature. The statement closes with the following conclusions, which are herewith commended for consideration at this time.

"That the overcrowded conditions at Waverley and Wrentham, the long waiting list at both institutions, and the presence of 10,000 feeble-minded at large in the state, demand that more adequate provision be made for their care.

"That without such care this large class of defectives constitutes a grave social menace to the state and imposes a heavy economic drain on the public resources.

"That not only the most humane but the least costly way to handle these unfortunates is by affording them institutional care and protection, and industrial training.

"That there is, therefore, urgent need for the establishment of a third school for the feeble-minded easily accessible to the center of population in Western Massachusetts."

DENTAL REGISTRATION IN MASSACHUSETTS.

THERE is at present pending before the Massachusetts General Court a bill (Senate No. 228) regarding the registration of dentists in this Commonwealth. Only two other states besides Massachusetts now permit the registration of dentists who have received no diploma from a recognized dental school. The present bill aims to remedy this condition in Massachusetts by the provision that,

"Any person 21 years of age or over and of good moral character, who is a graduate of an accredited high school or presents proof of equivalent training and has received a diploma from the faculty of a reputable dental college as defined in this act, shall, upon fulfillment of requirements for applicants as hereinafter specified, be entitled to examination by the board of dental examiners."

The bill further allows the privilege of examination for registration for those who have spent three years at a dental school and who have passed all the examinations of the first two years, although they have not yet received a degree.

Further, the bill provides as a measure of preventive dentistry that any person of good moral character and twenty years of age may qualify

by examination as a dental hygienist and may be given a certificate, allowing him or her "to clean teeth under the direction of a registered dentist of this Commonwealth, in public or private schools or institutions approved by the local board of health."

The JOURNAL has previously advocated editorially the passage of this so-called dental nurse clause, and its incorporation with the legislation regarding the practice of dentistry in this state. The importance of prophylaxis in the prevention of dental caries and its extensive consequent effect on general physical health seem so great that we believe this measure, by making possible more thorough care of the teeth, especially among children, than can be accomplished without excessive expense by practicing dentists, would contribute materially to the advancement and maintenance of the public welfare.

EMPLOYMENT OF PATIENTS IN HOSPITALS FOR THE INSANE.

THE recently published bulletin (No. 7) of the Massachusetts State Board of Insanity for March, 1915, contains a striking statement of the number of patients employed in the various state institutions in different occupations and industries. This survey of occupations for a single day at each of the state institutions under the supervision of the board, shows, in tabulated form, the total number of patients at each hospital on that day, the number employed, those unable to be employed, and the number idle. Stated in percentages the total number of employed in the various institutions was as follows:

At Wrentham, 95%; Gardner, 92%; Monson, 83%; Medfield, 81%; Worcester, 78%; School for the Feebleminded, 73%, Taunton, 71%, Westborough, 70%; Danvers, 61%; Boston, 60%; Foxborough, 54%; Northampton, 49%; Bridgewater, 42%; and Psychopathic Hospital, 30%. Further tables show the actual number of hours for which patients were employed in these institutions. The bulletin continues with an account of similar work being prosecuted in Illinois, and a statement of the manner in which these methods are followed in the hospitals of Germany and Switzerland. The account is extremely interesting in showing how completely this occupational side of therapeutics seems to be carried out in our state institutions.

MEETING FOR BELGIAN RED CROSS.

IN another column of this issue of the JOURNAL we publish a communication from Dr. Antoine Depage of Brussels to the American medical profession relative to the present urgent needs of the Belgian Red Cross.

Mme. Marie Depage, wife of Dr. Depage, head of the Belgian Red Cross, who has been sent to America to collect funds for the Belgian Red Cross relief work in the field hospitals and trenches, will speak at a meeting for the medical profession on April 14, at 4 o'clock, in the Boston Medical Library.

On the following day, April 15, at the same hour, Mme. Depage will speak at the house of Mrs. Edwin S. Webster, 261 Clarendon Street, Boston.

Invitations to these two occasions have been issued, and it is earnestly to be hoped that a liberal sum may be raised for this important measure of international medical relief.

MEDICAL NOTES.

GRIP STILL PREVALENT IN NEW YORK.—The mortality during the week just passed was noteworthy by reason of the very considerable increase in the number of deaths reported from all causes, the total having been 1831 as compared with 1612 in the corresponding week of 1914, an increase of 219 deaths. The increase in the death-rate was 1.39 of a point, which was equivalent to a relative increase in the number of deaths of 155.

The most potent factor of this increased mortality was the prevalence of influenza in a more virulent form than has happened in some years, with a corresponding increase in the deaths from acute respiratory diseases and organic diseases of the heart.

There were 407 deaths from acute bronchitis, broncho-pneumonia and lobar pneumonia, this number being in excess by 143 deaths of the number of deaths reported from this cause in 1914. In addition to this, the organic heart diseases showed an increase of 42 deaths. The mortality from the infectious diseases—measles, diphtheria, croup, and whooping cough—was slightly in excess of that of the previous year.

The prevalence of influenza made itself felt among persons of every age, but especially was the effect noticeable among the old people over 65 years of age, in which age group the number of deaths was increased by 541. Children under five years of age showed an increased mortality of 54 deaths, and between five and sixty-five years there was an increase of 111 deaths.

In spite of last week's high death-rate the death-rate for the first fourteen weeks of 1915

was only 14.38 per 1000 of the population, as against a rate of 15.57 during the corresponding period in the year 1914, a decrease of 1.19 of a point.

Award of the Seaman Medal.—It is announced that the Lewis Livingstone Seaman medal has been awarded to Dr. William C. Gorgas, Surgeon-General of the United States Army for progress and achievement in the promotion of hygiene and the mitigation of occupational disease.

Public Health Organization in the State of New York.—The New York State Department of Health has recently issued as the first part of its thirty-fifth annual report, the report of the public health council. This council, consisting of Hermann M. Biggs, M.D., Chairman, and six other members, clearly sets forth the aims and the organization of its work from its creation in 1913 to December 31, 1914. The first action of the council was to prescribe the qualifications of the various divisions under which the public health law provided for the conduct of the affairs of the state department of health. These divisions were of tuberculosis, child hygiene and of vital statistics. The council next set about prescribing the qualifications of sanitary supervisors of sanitary districts and of the qualifications of public health nurses. The position of sanitary supervisor was voted to be placed under Civil Service rules and of the 141 persons taking the examination in March, 1914, 87 were placed on the eligible list.

The council further framed a sanitary code, the first chapters of which went into effect May 1, 1914. Chapter 1 deals with general provisions, chapter 2, communicable diseases, and the following five chapters cover milk and cream regulations, midwives, labor camps, nuisances and miscellaneous matters such as spitting, common drinking cup and barber shops. This report should be of great interest and value to those engaged in the service of the public health.

The second part of the annual report contains a letter from Dr. H. M. Biggs, as Commissioner of Health, to the Governor of New York, in which he makes an appeal for increased appropriations to carry forward the campaign of education, to extend laboratory facilities for the diagnosis and specific treatment of disease, to safeguard the people against preventable diseases and to postpone the approach of those diseases which are inevitable. He further states that the state department has set for itself the task of saving 25,000 lives within five years, pointing out the fact that in the census of 1913 the death rate of the State of New York was next to the highest, having a percentage of 15.2 per one thousand inhabitants.

New Red Cross Building.—On March 27 the corner stone of the new Red Cross building at Washington, D. C., was laid by President Wilson and Ex-president Taft with appropriate ceremonies.

"The new building faces the wide sweep of grounds back of the State Department and White House. The building and site, provided by Government appropriation and private subscription, will be turned over in perpetuity to the American Red Cross. Here the organization will make its permanent home, and the building will house all of the administrative officers in charge of Red Cross work. The commission has at its disposal $800,000, of which $400,000 was appropriated by Congress, on condition that the Red Cross raise an equal amount by private subscription. The additional sum was made up by the following subscriptions: James A. Scrymser, $100,000; Mrs. Russell Sage, $150,000; Mrs. Edward H. Harriman, $50,000; the Rockefeller Foundation $100,000.

"The new building, like most of the others in the stately group about it, will be of white marble and the general design of the structure, its façade, columns, etc., will be on classic lines. A parked terrace will raise the building above the street level, and wide marble steps will lead up to the entrance. A row of twelve Corinthian columns of white marble will stretch across the entire front of the structure, the capitals supporting the copper-finished roof. Two massive bronze entrance doors are one of the striking features of the architectural plans. Within the high-arched vestibule a flight of broad marble stairs will lead to the second and third floors. On the stairway landing a marble tablet will be placed bearing the following inscription:

> "'A memorial built by the Government of the United States and patriotic citizens to the women of the North and the women of the South held in loving memory by a now united country, and that their labors to mitigate the sufferings of the sick and wounded in war may be forever perpetuated, this memorial is dedicated to the service of the American Red Cross.'

"On the landing will also be placed three allegorical busts in white marble, representing Faith, Hope and Charity. All of the decorations will be marked by dignity and simplicity. The extensive working quarters on the three floors of the building will be equipped to accommodate all the branches of the Red Cross, with its varied activities in peace and war. On the first floor a large assembly room and library will take up all of one side of the building, and will afford a meeting place for the large gatherings of the organization. The central committee of the Red Cross will have special quarters. The War, National and International Relief boards will each have rooms particularly fitted for their special work. The army surgeon in charge of hospital field units and the enrollment of doctors, the first aid instruction department, the Nurses' Enrollment Bureau, the Town and Country Nursing Service and the Christmas Seal Division will all be quartered according to their

needs. Of the $800,000 available for the memorial, $357,000 was expended by the commission in the purchase of the site. The entire block surrounding the structure was acquired, and it will be laid out in parking, gardens and suitable approaches. Under the contract for the construction of the building, it will be completed and ready for occupancy by April 20, 1916."

TYPHOID MARY APPREHENDED.—After much difficulty, Mary Mallon, known as "Typhoid Mary," was discovered in hiding at Corona, N. Y., and arrested. She had fled there from the Sloane Maternity Hospital in Manhattan, after the outbreak of twenty-five cases of typhoid had occurred among the nurses and physicians of the hospital. She had been serving as cook at this institution under an assumed name, in spite of the fact that at the time of her release from North Brother Island on Feb. 19, 1910, she had signed a promise that she would not again take a position as a cook. Mary Mallon first came into public notice during an outbreak of typhoid fever at Glen Cove, N. Y., in 1906, when twenty-six cases developed.

RED CROSS CONTINGENT SAILS FOR SERBIA.—On April 3 the following members of the American Red Cross Sanitary Commission sailed on the *Duca d'Aosta* for Naples, where they will proceed, under the leadership of Dr. Richard P. Strong of the Harvard Medical School, to Serbia, in an effort to stamp out the epidemics of typhus and cholera raging in that unfortunate country. Dr. Thomas W. Jackson of Philadelphia is chief sanitary inspector of the commission; Dr. Hans Zinsser, bacteriologist; Dr. Andrew W. Sellards, Dr. George C. Shattuck, Dr. F. B. Grinnell, Dr. B. W. Caldwell and Messrs. W. S. Standifer, Luis de la Pena and Hobart D. Brink, sanitary inspectors. They will join Dr. Strong at Salonica. Dr. Strong sailed for Serbia several weeks ago and will be joined by the party at Salonica.

RISING DEATH-RATE FROM DEGENERATIVE DISEASES.—Professor Irving Fisher of Yale University, one of the directors of the Life Extension Institute, in a recent address before the Twentieth Century Club emphasized the need of personal hygiene to offset the rapidly rising death-rate from degenerative diseases. That the death-rate from infectious diseases is constantly declining is due to the efforts of boards of health and health workers of all kinds, but Professor Fisher states:—

"There is need of a similarly vigorous fight against the degenerative diseases. By the degenerative diseases is meant those which consist in the degeneration, or wearing out, of the vital organs. It may be difficult always to distinguish between infectious and degenerative diseases, but that there is a broad distinction cannot be doubted. Our vital statistics show us that, while the loss of life from infection before middle age has decreased, the loss of life after middle age from degeneration has increased. The truth is we are witnessing a race between two tendencies, a reduction of the acute or infectious diseases, such as typhoid, and an increase in the chronic or degenerative diseases such as arterio-sclerosis and Bright's disease. Such a process bids fair soon to change our net gain in the average life span into a net loss, unless we attack this degenerative problem very soon.

"The situation is especially alarming for us in the United States, because this tendency toward degeneration seems to be more in evidence here than elsewhere. In the United States the rate of life-lengthening is less than that for Europe as a whole, and our statistics show that the expectation of life after middle age is distinctly declining, while there is an ominous increase in the death-rate from the chief degenerative diseases. The number of people now dying from diseases of the blood vessels is nearly four times as great as three decades ago. This is found in the rural districts as well as in the cities, is found among the native-born as well as the foreign-born, and is found in all classes of males in gainful occupations, where a marked advance appears."

DEFEAT OF NEBRASKA EUGENIC BILL.—The lower house of the Nebraska Legislature defeated, on March 30, the new eugenic marriage bill patterned after the Wisconsin law. The bill was unpopular because women were exempted from its provisions.

NEW JERSEY STATE HOSPITAL, MORRIS PLAINS, N. J.—The thirty-ninth annual report of the New Jersey State Hospital for the Insane, at Morris Plains, N. J., contains the following statistics:

"During the year 2960 patients were under treatment—1500 men and 1460 women. The largest number under treatment at one time was 2522, on Sept. 30, 1914. The number of admissions for the year is 549—275 men and 274 women. There were remaining on Oct. 31, 1914, 2509 patients—1261 men and 1248 women. This is an increase in population of 98 over that shown in last year's report. There were discharged as recovered 83 patients. One hundred and eighty-four died—6.2% of the number treated throughout the year.

ERADICATION OF FOOT AND MOUTH DISEASE.—On Apr. 2, the United States Department of Agriculture issued at Washington a statement to the effect that with the exception of a small focus at Syracuse, N. Y., the recent epizoötic of foot and mouth disease in this country is essentially at an end.

"Figures compiled by the department show that 124,141 animals have been slaughtered from the time of the outbreak in October to March 25 last. Interference with the operations of the stock yards at Chicago and other principal shipping points, the quarantining of infected regions and other precautionary measures, it was said, had caused indeterminable losses. Only a few

infected herds have been reported since March 25, and it was said all these had been slaughtered. Concerning the probability of future trouble from the disease, a statement by the department said:

"Although all the infected animals have been killed and buried, it is by no means certain that all possible means of conveying the infection have been destroyed. It is considered inevitable, therefore, that more animals will be stricken, but these should be only sporadic cases, which, if promptly reported, can be taken care of in time to prevent any further serious spreading of the disease.

"The $2,500,000 emergency fund which Congress places at the disposal of the Secretary of Agriculture to combat contagious diseases, officials of the department said, was practically depleted in financing the war against the disease.

"Preliminary estimates place the actual cost to the Federal Government of animals killed because of the plague infection at between two and three million dollars. The government paid only fifty per cent. of the value of the animals slaughtered, the states, in the majority of cases, reimbursing the others with an equal amount. The total value of animals killed by both the state and federal authorities, therefore, would be between five and six million dollars."

LOOMIS SANATORIUM, LIBERTY, N. Y.—The annual report of the Loomis Sanatorium, Liberty, N. Y., for the year ending Oct. 31, 1914, records the work of that hospital in the care and treatment of tuberculosis. Three hundred and fifty-two patients were admitted during the year. Of the 289 patients to leave the hospital during the year 48 were apparently cured, the disease was arrested in 51 patients and 18 died. Those discharged as apparently cured had been under treatment at the sanatorium for an average number of 28.28 weeks; those discharged with disease arrested had been under treatment for an average length of 32.71 weeks.

FEDERAL CONTROL OF QUARANTINE.—Following the action of the City of Boston in transferring its municipal quarantine function to the National Government, the assistant secretary of the treasury has instituted a further active attempt to obtain federal control also of the quarantine stations at New York, Baltimore and Galveston, the only three which remain under local administration. In a letter on this subject to the governor of New York, the secretary writes in part as follows:—

"The taking over of the quarantine control at these ports on the Atlantic seaboard, it is expected, will have a far-reaching effect on public health in the United States, especially as it refers to the prevention of the introduction of quarantinable disease from Europe.

"Owing to the European war, these diseases, notably cholera, plague and typhus fever, are reported not only to have increased in volume in certain points, especially in Serbia and Greece, but the spread of these diseases has been great in all directions. On this account the problem of quarantine at the various ports of the United States promises from now on to assume greater importance than ever before.

"Special apprehension is felt as to the chances of infection being brought in after the war is over, when immigration will doubtless increase in volume, and will include men and women from all walks of life from nearly all parts of Europe."

The same reasons which led the JOURNAL to advocate the transfer of the Boston Quarantine Service, make it desirable also that these remaining services should be placed under uniform national control.

HARVARD MEDICAL EXPEDITIONARY UNIT.—Report from Paris states that the Harvard Medical Expeditionary Unit reached Gibraltar safely on March 27 and arrived at Paris on March 30. On April 1, the members of the unit began their three months' term of service at the American Ambulance Hospital at Neuilly, relieving the unit from the Western Reserve University.

PROPOSED CHAIR OF MENTAL DISEASES.—A movement has been initiated under the sponsorship of Dr. Edward H. Bradford, Dr. William N. Bullard, Dr. Walter Channing and Dr. Philip B. Howard to raise a fund of $150,000 for the endowment of a chair of mental diseases at the Harvard Medical School. The following preliminary statement has been issued by the sponsors.

"The suffering caused by insanity and allied disease is so widespread and so serious that efforts for its alleviation demand the most earnest attention and effective action. There is at present a special and crying need for assistance in this work. The undersigned, therefore, ask for money, viz:

"For research through the neuropathological department of the Harvard Medical School, where special opportunities now exist which should be taken immediate advantage of, and

"For the increase of instruction in the Harvard Medical School, through the endowment of a professorship of psychiatry (insanity and mental disease)—a subject for which adequate teaching has never been provided."

It is earnestly to be hoped that generous subscriptions to this fund may enable the early establishment of this valuable and important chair.

ANIMAL EXPERIMENTATION IN NEW JERSEY.—Report from Trenton, N. J., states that on March 29 the state legislature passed an important bill permitting the Rockefeller Institute for Medical Research to establish a laboratory for animal experimentation in New Jersey. This measure, which had been urgently opposed by anti-vivisectionists, was signed by the governor on April 6. The law provides for the super-

vision of these experiments by the state board of health.

EUROPEAN WAR RELIEF FUNDS.—On April 10 the totals of the principal American relief funds for the European War reached the following amounts:

	N. Y.	N. E.
Belgian Fund	$1,017,159.19	$245,979.52
Jewish Fund		56,945.05
Red Cross Fund	477,160.97	127,802.59
Committee of Mercy	141,869.20	
Prince of Wales Fund	116,744.48	
Polish Fund	36,454.35	40,336.41
Persian Fund	17,585.50	
Serbian Fund	1,719.00	

BOSTON AND NEW ENGLAND.

FITCHBURG BOARD OF HEALTH.—The report of the Board of Health of Fitchburg for the year 1914 gives a detailed record of the work of the bacteriologist, the agent of the board, the school physician, the school nurse, the board of health nurse, the inspector of milk, the inspector of plumbing, inspector of meats and provisions and inspector of slaughtering. The work of the school physician is especially interesting. During the year 11,373 examinations were made of school children, and 1303 cases referred to the school nurse, who made 1936 calls at the homes of the patients. Six hundred and seventy-eight children were found to have tonsils and adenoids requiring operative treatment. In many instances families, whose financial circumstances did not permit proper attention to the correction of defects, received aid through hospitals and the attention of the school nurse.

LOCAL EPIDEMICS OF MEASLES.—There are at present several local epidemics of measles in various Massachusetts cities and towns. During the three weeks preceding April 6, 400 cases of this disease were reported in Medford, 50 in Melrose, 50 in Malden and 150 in Wakefield. Many of the schools in these communities have been indefinitely closed until subsidence of the infection.

EXPERIMENTAL PATHOLOGY AT THE BOSTON CITY HOSPITAL.—It has been recommended by Mayor Curley to the trustees of the Boston City Hospital that a fund of $20,000 be established in the pathological department of the institution for the special study of scarlet fever and measles in the effort to determine the etiologic agent of these infections and to discover a means for their cure and for immunization against them.

SOCIAL SERVICE AT THE MASSACHUSETTS GENERAL HOSPITAL.—The ninth annual report of the social service department of the Massachusetts General Hospital shows a commendable growth of activity and efficiency in the work of this department. During the past year 823 patients were treated, 262 were referred from the children's department, 70 from the orthopedic department, 76 from the nerve clinic and 83 for sex problems. Donations to the general fund amounted to $11,275.00, to the salary fund $3,897.96, and for special purposes $1,783.85. $5000, as the nucleus of a permanent fund, has been given by Mrs. Shepherd Brooks. The usefulness of the department is dependent on its resources. The treasurer of the Social Service Department, Massachusetts General Hospital, will gladly receive contributions to maintain the rapidly increasing work of this movement.

HOSPITAL BEQUESTS.—The will of the late Frank W. Bolles of Boston, who died in this city on March 30, was filed on April 6 in the Suffolk Probate Court. It contains an immediate bequest of $10,000 to the Channing Home, and on the death of the sole personal beneficiary, provides that the residue of the estate shall be equally distributed among various charitable institutions, including the Children's Hospital, the Perkins Institution for the Blind and the New England Peabody Home for Crippled Children. A codicil also contains bequests of $15,000 to the Boston Home for Incurables, $2000 to the Massachusetts General Hospital, and $2000 to the Nurses' Alumni Association of the New England Deaconess Hospital.

CASES OF INFECTIOUS DISEASES reported to the Boston Board of Health for the week ending April 6, 1915: Diphtheria, 62, of which 5 were non-residents; scarlatina, 110, of which 14 were non-residents; typhoid fever, 2; measles, 183, of which 2 were non-residents; tuberculosis, 61, of which 2 were non-residents. The death-rate of the reported deaths for the week was 20.15.

POSTPONEMENT OF DR. SMITH'S DINNER.—Owing to the temporary illness of Dr. Theobald Smith, the dinner in his honor, to be held on April 17, has been postponed.

Massachusetts Medical Society.

PLYMOUTH DISTRICT MEDICAL SOCIETY. ANNUAL MEETING.—The annual meeting of the Plymouth District Medical Society will be held at the Commercial Club Annex, Brockton, April 15, 1915, at 11 A.M. Officers for the ensuing year will be elected and the annual oration will be given by Dr. Ernest B. Emerson, Medical Director, State Farm, Bridgewater. Subject, "Alcoholism."

ALFRED C. SMITH, M.D., *Secretary.*

Miscellany.

UNUSUAL GUNSHOT WOUNDS.

A CORRESPONDENT in a recent issue of the *British Medical Journal* records several instances of unusual gunshot wounds, and comments on the peculiar vagaries of modern rifle projectiles:

"In one case the bullet had entered just in front of the ear, and having passed through the body of the sphenoid, made its exit at a corresponding point on the opposite side of the face. Its track was perfectly straight, but though the wound was merely one of the face, it nevertheless proved instantly fatal. The reason was obvious on opening the skull and raising the brain. The under surface of the frontal lobes had been reduced to a structureless jelly. The case illustrates what has been said by more than one authority as to the bruising and devitalizing action a bullet may exercise on the tissues if at the moment of impact it is travelling almost at its initial speed. It might, perhaps, be expected that the greater the speed of the bullet the more knife-like would be its action on the tissues, but almost the converse would appear to be the case. The extent of the momentum possessed by a bullet which has not traveled more than 200 or 300 yards leads to the production of waves of force emanating from it in all directions the instant it meets with the slightest resistance; this seems all the more liable to occur if the initial impact of the bullet has not been at right angles to the general surface. In the present case the subsidiary lines of force seem to have been so powerful that even the fact that a bony diaphragm lay between the track of the bullet and the brain did not suffice to protect it. What are probably precisely analogous waves can be produced experimentally in many different ways. If a finger be passed through a basin of water the surface of the latter will be undisturbed if the movement be slow; if quick, a proportionate ripple will result.

"The second case was one in which the bullet had probably travelled a considerable distance—say, 1500 to 2000 yards—before it reached its mark, and its residual momentum was small. The wound was in the forehead and the bullet was found just inside it. Behind the bullet, however, and in a line with the hole in the forehead, was a track leading right through the brain to a distinct bruise on the inner plate of the occipital bone. It was concluded that the bullet, after penetrating the frontal bone and the brain, had struck the occipital bone and rebounded back along its original track. In this case there was no general bruising of the tissues surrounding the track, and it was considered that the momentum of the bullet on impact had fallen so low that when the frontal bone and brain had been traversed the elasticity of the occipital bone sufficed to drive it back. Cases in which the opposing forces are so nicely balanced must be rare. Clinically the different effect of fast travelling and slow travelling bullets is suggested by the fact that cases in which a bullet has penetrated but not perforated the skull are among the most hopeful of their class. It may be that in the case of the brain quite small differences in the momentum make very great difference in the extent of the injury inflicted. I have in mind cases in which the perforated portions of the brain have been seemingly identical but the clinical phenomena materially different.

"In the third case death was due to a penetrating wound of the chest. The opening was rather larger than is usual with those caused either by shrapnel or rifle bullets. On post-mortem examination, no foreign body of any kind could at first be discovered, but at length a rifle bullet was found embedded sideways in the body of a vertebra, that is to say, the long axis of the bullet was parallel to the long axis of the spinal column. The case was believed to be an illustration of the fact that rifle bullets sometimes turn over in their flight, for the character of the external wound and the position of the bullet in the vertebra were held to prove that it had struck and entered the chest when midway in a revolution round its short axis."

THE IATRO-CHEMICAL AND IATRO-PHYSICAL SECTS.

IN a recent publication (The Chemic Problem in Nutrition), Dr. John Aulde of Philadelphia presents a sketch of the causative factors in disorders of nutrition as related to diseases of the nervous system. Apart from the clinical merits of his study of magnesium infiltration, the book presents an interesting collateral historical sketch of the iatro-chemical sect which was founded in the latter half of the 17th century:

"According to Sylvius, an industrious student of Van Helmont and Descartes, health depends upon the relation of the fluids, acid and alkaline, their union producing a neutral and milder substance. Two kinds of diseases were distinguished, the result either of acid or alkaline acridity. Among the prominent followers of Sylvius might be mentioned Willis, the celebrated English anatomist; Glauber, the discoverer of sodium sulphate (Glauber's salt), and many others; but iatro-chemistry gradually lost repute, and was completely overthrown early in the 18th century, principally through the teachings of Hoffmann.

"Founded upon more assumption and a smattering of chemistry, with no definite conception of physiology, iatro-chemistry was foredoomed to failure. It seems paradoxical, too, because this was a period of exceptional activity in laying

the foundations of medical science. Such names as Harvey, Steno, Vieussens, Malpighi, Spigelius, Bartholin, Asselius, Pauli, Mentel, Wesling, Highmore, Glisson, Wharton, Leeuwenhoeck, Ruysch, Sydenham, Boerhaave, Stahl, Albertini, Valsalva, Bellini, Swammerdam, Meibomius, Peyer, Duverney, Cowper, all belong to this period, and it is remarkable, to say the least, that they failed to distinguish the normal alkalinity of the building-up, from the normal acidity incident to the breaking-down processes in both animal and plant life."

The iatro-chemical was contrasted with the iatro-physical sect, a school of physicians also arising in the seventeenth century in Italy. The members of the iatro-physical school sought to explain the functions of the body and the application of remedies by static and hydraulic laws. They were earnest students of anatomy and were, perhaps, the intellectual and temperamental antecedents of modern professors of the mechanistic conception of life and its phenomena.

Correspondence.

TUBERCULOSIS AND LOCAL BOARDS OF HEALTH.

WEST NEWTON, MASS., April 2, 1915.

Mr. Editor: At the meeting of the Massachusetts Antituberculosis League yesterday, I was much impressed with the tendency of the readers of papers, especially of those holding state positions, to criticize and blame the local boards of health.

I believe if the readers had been more familiar with the trials and tribulations of local boards they would have been more lenient with them.

When we consider that the local boards are ground between the upper millstone of state statutes passed with little knowledge of or regard for local conditions, and the lower one of the local demand for economy, we should realize that they are to be pitied rather than blamed.

The member of the average local board of health is too often a man who has been appointed because no one else will take the job; he is seldom paid, and when appointed knows little or nothing about public health work, and yet is held responsible for the health of his community and required to pass upon questions of which he knows little.

I say this in the full knowledge that even so, he is an earnest, painstaking man, trying to do the best that he can in spite of his handicaps and that he usually "makes good."

It seems to me that such a man should not be blamed and ridiculed (for I regret to say that he was ridiculed), but should be praised for what he has done and helped to do better.

Too often the law, which he is blamed for failing to enforce, is so framed as to make conviction under it, difficult or impossible or, if he does attempt to punish the offender, the culprit is let off with a reprimand or the case dismissed.

If, instead of blaming the local boards, the state authorities would help them and explain to them how to solve their problems, I believe that we should see a great advance in efficiency in public health work.

When all is said, the state authorities and the local boards of health are but coördinate parts of the great system of health protection and they should work together in harmony, rather than find fault with and seek to make good at each other's expense.

Very truly yours,

FRANCIS GEO. CURTIS, M.D.,
Chairman, Newton Board of Health.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION FOR THE WEEK ENDING APRIL 3, 1915.

CONTRIBUTIONS.

Dr. John Lewis Stevens, Mansfield, Ohio	$ 5.00
Hoquiam Surgical Club, Hoquiam, Wash.	10.00
Dr. J. D. Griffith, Kansas City, Mo.	5.00
Dr. Philip F. Williams, Philadeldphia, Pa.	5.00
Visiting Nurse Association of Chicago, Chicago, Ill.	12.00
Dr. Burnley Lankford, Norfolk, Va.	5.00
Dr. Irene M. Morse, Clinton, Mass.	3.00
The Homochitto Valley Medical Society, Natchez, Miss.	14.25
Dr. T. L. Macdonald, Washington, D. C.	10.00
The Yankton District Medical Society, Yankton, S. Dakota	50.00
Dr. James D. Voorhees, New York, N. Y.	25.00
Receipts for week ending April 3	$ 144.25
Previously reported receipts	5752.25
Total receipts	$5896.50
Previously reported disbursements:	
1625 standard boxes of food @ $2.20	$3575.00
945 standard boxes of food @ $2.30	2173.50
Disbursements for the week ending April 3:	
64 standard boxes of food @ $2.30	147.20
Total disbursements	$5895.70
Balance	$0.80

F. F. SIMPSON, M.D., *Treasurer,*
7048 Jenkins Arcade Buldg.,
Pittsburg, Pa.

In the ancient times there was a cry from Macedonia "Come and help us." St. Paul took that as the voice of God and responded with spiritual and mental pabulum. Today there is a cry from Belgium "Send us food or we perish." This is just as much the voice of God as the cry that reached St. Paul—and the response is even more necessitous. The pictures of wretchedness in that pitiful land grow more and more appalling from day to day. Miss Winifred Holt, secretary of the New York Association for the Blind, has just returned from Europe where she went in the interest of the blind Belgian refugees. She says there are no exact data but it is estimated that one person in every 1200 in Belgium was either partially or totally blind, or about 8000. When Belgium became the hotbed of war there were thirteen institutions for the blind, deaf and dumb. These were all wrecked and their sorry inhabitants poured forth in a mad rush of surging masses of blind men and women and children, seeking such guidance as they could get groping for places of safety. They must now be scattered among the helpless, starving, unfortunate refugees standing in the breadline that stretches all over Belgium.

The president of the National Relief Commission of Brussels asserted on March 25, that before the next harvest, 2,500,000 Belgians will be in the bread-

line. Foodstuffs must be continued to be provided in the fairly regular way in which they have been supplied heretofore. Belgium has been saved from the intermittent periods of starvation by the personal sacrifices of the Directors of the American Commission who have at these times pledged their personal credit for as much as $10,000,000. All honor to the Commissioners.

We of the medical profession of America must see to it that our Belgian colleagues and their families are saved from such intermittent periods of starvation by keeping the stream of food and supply boxes pouring in to them in a steady flow.

J. RIDDLE GOFFE, M.D.,
New York, N. Y.

BELGIAN SCHOLARSHIP COMMITTEE.

The Belgian Scholarship Committee, of Washington, D. C., has recently issued the following circular letter of appeal in behalf of destitute Belgian scholars, and in anticipation of the future needs of Belgium during its period of educational reconstruction:

"In consequence of the devastation of Belgian museums, libraries and universities, numerous worthy students, research workers and professors, many of them crippled for life, are interrupted in their important work. To the lovers of equity, and to those who cherish education and admire Belgian integrity and heroism, an opportunity is hereby given, to assist in bringing to America, worthy intellectual men and women for a temporary free enjoyment of the privileges of American institutions.

"This committee has already received assurances from the George Washington University for the instruction of ten students in any of the departments of the University. The following is from the minutes of the Board of Trustees: 'On motion it was resolved that the University offer, within the discretion of the president, free tuition to the extent of $1500.00 to European college students who are unable by reason of present conditions in Europe to pursue their courses at their respective colleges.' It is highly probable that the committee will receive from other American institutions similar assurances.

"It is proposed to raise a fund at once to defray the traveling expenses to and from Belgium, and the cost of residence in Washington for a period of one year, of the students or research workers, which the George Washington University has already generously provided for. In the case of professors it is hoped that the subscriptions will be sufficiently liberal to provide for honorariums as well, thereby giving all the students in Washington the benefits of lectures by Belgian scholars.

"It is estimated that from $20,000 to $25,000 will be needed in the work at once, and in the event of a surplus being accumulated, it is proposed to apply this to the recuperation of educational work in Belgium. This committee is a sub-committee of the Central Committee for the Belgium Relief Fund for women and children and other non-combatants, and it is organized with the approval of his Excellency, the Minister from Belgium to the United States.

"Please draw checks payable to Belgian Scholarship Committee, John Joy Edson, Treasurer, Washington Loan and Trust Building, Washington, D. C. Checks for any amount, large or small, are earnestly asked for. Please send something.

"NEVIL MONROE HOPKINS, *Chairman.*"

BELGIAN RED CROSS.

The following letter from Dr. Depage of Brussels, to the American medical profession, has been recently received. In another column of the JOURNAL is a statement of a meeting to be held in an attempt to carry out the requests which Dr. Depage makes.

BRUSSELS, January 23, 1915.

My dear Colleagues: It is not without emotion that, in this time of trouble, I recall the sympathy with which you welcomed me some months ago.

In free and proud America, at the meeting of our International Congress of Surgery, of which I had the honor of being President, we all felt equally united not only in our scientific work but also in the entertainments which expressed the cordial hospitality and fraternal feeling with which you received us.

We did not dream then of the events which were going to happen, of the complete overthrow of Europe, and of the unmerited misfortune which has stricken down my country. However, our Congress opened with a discussion of surgery in war; and I then expressed this idea (alas, prophetic), that just as the armor-plate of battleships is increased in accordance with the increase of the power of projectiles, so the science of surgery should progress step by step with the increase of the strength of armaments, and should contend by all the means of human creative genius against the demon of destruction.

Present events have proven, only too well, the justice of this point in view. Nevertheless, let me again today affirm to you my opinion, and let me join you in the hope that the peace of tomorrow will bind the United States of Europe and the United States of America in eternal bonds of brotherly love.

In the meantime the situation in which we find ourselves is truly tragic. The Belgian Red Cross finds itself confronted by conditions which are unique in its history. The country, after a heroic defense, has been almost entirely overrun: its cities destroyed, buildings annihilated; installations confiscated by the enemy; its resources wiped out. That is the sad picture it presents. The Belgian population has been compelled to flee the country; our wounded are forced to seek asylum in foreign lands. Others have told you, others will tell you again, of the pitiless character of this war. As for me, as a doctor, I wish during the war to occupy myself with but one thing,—the care of the wounded. My sole preoccupation is to save human lives, and sometimes to save what is more precious than life, when by preventive measures, we can save the wounded from becoming crippled for the rest of their existence.

And so I face the situation in which our Red Cross work finds itself in this war, and I seek for means to assure to our soldiers the care which they expect from us. We have before us a ravaged country which offers no shelter for our hospitals, no implements, no resources of any kind. We are, therefore, face to face with the necessity of reconstructing entirely our hospitals and ambulances and of furnishing them completely with all necessary supplies.

Up to the present, England and France have helped us greatly. For the aid they have given we are profoundly grateful, but their resources are not inexhaustible and our needs are constantly increasing. America, I know, has already given generously to Belgium. Encouraged by your brotherly sympathy, I ask you for still more, and I send you my faithful collaborator, Madame Depage, who accompanied me on my last visit among you. The Managing Committee of the Belgian Red Cross has appointed her for the purpose of organizing, in its name, an American-Belgian Committee which will centralize all contributions and forward them directly and promptly, so that we may continue our work and meet our needs.

We thank the great American nation which, in the saddest hour of our history, has given us such generous help. I appeal specially to you, my dear colleagues, and I ask you to help me in my effort. I know you well enough to feel sure that I shall find in you the most fraternal and devoted assistance. I thank you in advance, and, in the name of the Red

Cross of Belgium, as well as in the name of the whole country, I express to you our profound and sincere gratitude.

A. DEPAGE,
Professor of the Surgical Clinic,
of the Free University of Brussels;
President of the International Congress
of Surgery, New York, 1914.
Director of the Belgian Red Cross with
the Belgian Army.

It is earnestly hoped that the medical profession will respond to this appeal made by our colleague in his time of need.

J. COLLINS WARREN, M.D.
GEORGE H. MONKS, M.D.
S. J. MIXTER, M.D.

NOTICE.

THE CUTTER LECTURE on Preventive Medicine and Hygiene will be given by Victor C. Vaughan, M.D., Dean of the School of Medicine and Surgery, University of Michigan, on the subject, "The Phenomena of Infection," on Wednesday, April 14; Thursday, April 15; and Friday, April 16, at the Harvard Medical School, Amphitheatre, Building E, 5 to 6 P.M.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston, and be free to the medical profession and the press.

The members of all classes in the medical school, the medical profession, the press, and others interested are cordially invited to attend.

SOCIETY NOTICES.

NEW ENGLAND PEDIATRIC SOCIETY.—The thirty-eighth meeting of the New England Pediatric Society will be held in the Boston Medical Library, Friday, April 30, 1915, at 8.15 P.M.

The following papers will be read:

1. "Can the Speech Present a Sign of Congenital Syphilis?" W. B. Swift, M.D., Boston.
2. "Acute Otitis Media in Childhood: Avoidable Mistakes in Diagnosis, Prevention, Treatment." W. R. P. Emerson, M.D., Boston.
3. "Studies in Bronchial Glands." W. W. Howell, M.D., Boston.
4. "Endocarditis in Children: Its Prophylaxis and Treatment in an Out-Patient Department." R. S. Eustis, M.D., Boston.

Light refreshments will be served after the meeting.

E. M. BUCKINGHAM, M.D., *President.*
RICHARD M. SMITH, M.D., *Secretary.*

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—The annual meeting of the Society will be held at the American House, Boston, on Wednesday, April 21, 1915, at 11 A.M. The annual oration will be delivered at 12 o'clock, noon, by Dr. William C. Hanson, of Belmont. Subject: "Scope of Public Health Service."

Dinner will be served at 1 P.M.

LYMAN S. HAPGOOD, M.D., *Secretary.*
6 Garden St., Cambridge, Mass.

HAMPDEN DISTRICT MEDICAL SOCIETY.—The annual meeting of the Hampden District Medical Society will be held at the Academy of Medicine Building, 349 State St., Springfield, on Tuesday, April 20, 1915, at 4 P.M.

Election of officers.

Papers for the afternoon:

"The Diagnosis of Stomach Conditions from Tube Findings," P. M. Cort, M.D.

"The Diagnosis of Stomach Conditions by the Roentgen Ray." Illustrated by lantern slides. H. W. Van Allen, M.D.

Discussion.

Luncheon at expense of Society.

HERVEY L. SMITH, M.D., *Secretary.*

APPOINTMENTS.

Dr. John R. Murlin of the Cornell University Medical School, has received a temporary appointment as biochemist at the pellagra hospital of the United States Public Health Service at Spartanburg, S. C.

Dr. Andrew Hunter of the Cornell University Medical School, has been appointed professor of pathological chemistry in the University of Toronto.

Dr. R. Travers Smith has been appointed professor of materia medica, therapeutics and pharmacology in the School of Surgery of the Royal College of Surgeons of Ireland.

RECENT DEATHS.

DR. GEORGE DICKINSON THAYER, a Fellow of The Massachusetts Medical Society, died at his home in Northampton, Mass., March 16, of heart disease, aged 57 years. Dr. Thayer had been county physician for thirty-two years and city physician for nine years. He was a graduate of New York University Medical College in 1881, and joined The Massachusetts Medical Society in 1882.

DR. WILLIAM J. DOUGHERTY, who died on April 6 at Beverly Farms, Mass., was born at Lowell, Mass., in 1882. He studied medicine at Tufts College and at the Johns Hopkins University. He is survived by his widow and by one son.

DR. CHARLES FESSENDEN NICHOLS, who died on April 5 at West Roxbury, Mass., was born in Salem, Mass., on February 20, 1846. He received the degree of M.D. in 1870 from the Harvard Medical School and subsequently practised his profession in this city until his death. He was a member of the Harvard Medical Alumni Association and of the American Institute of Homeopathy. He is survived by his widow, one daughter and two sons.

DR. JAMES COUGHLIN O'DONNELL, who died on March 30, at Northampton, Mass., was born at Florence, Mass., in 1871. He received the degree of A.B. from Holy Cross College in 1892 and subsequently studied medicine at the New York College of Physicians and Surgeons, and later at the Harvard Medical School, from which he received the degree of M.D. in 1899. After serving for a time as house officer at the Boston Children's Hospital and at St. John's Hospital in Lowell, Mass., he settled in the practise of his profession at Haverhill, Mass., subsequently removing to Northampton in 1895. He was unmarried.

DR. MANTON HOLLY, who died of pneumonia on April 7 at Greenwich, Conn., was born in New York City on March 28, 1833. He studied medicine at the Yale Medical School and at the New York College of Physicians and Surgeons, and served throughout the Civil War as surgeon in a military hospital at Washington, D. C.

DR. WILLIAM ORRIS MANN, Superintendent of the Massachusetts Homeopathic Hospital, died in that institution, April 9, aged 45 years, following a surgical operation. He was born in Randolph, Mass., and was a graduate of the Boston University School of Medicine in 1892. He was president of the American Hospital Association and a Fellow of The Massachusetts Medical Society. He is survived by his widow and two daughters.

BOOKS AND PAMPHLETS RECEIVED.

Pyelography, by William F. Braasch, M.D. W. B. Saunders Co. 1915.